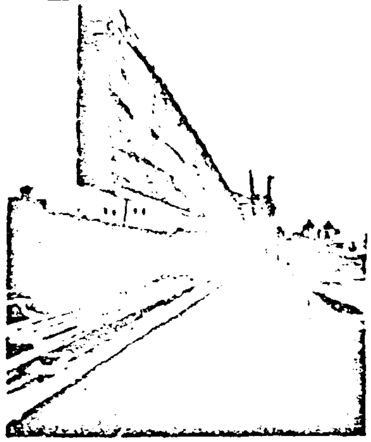
lead

LEAD INDUSTRIES ASSOCIATION, INC.

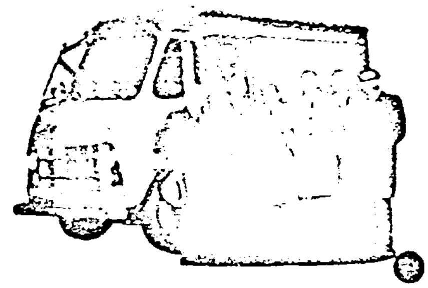
LOOK WHAT BATTERIES ARE DOING!

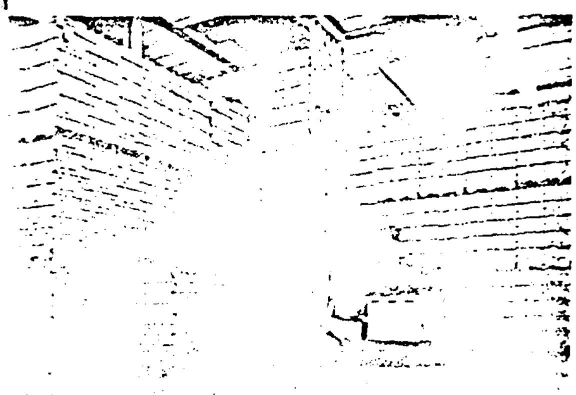
Here are four examples of the wide variety of tasks being performed in industry and commerce by reliable lead-acid battery-powered trucks . . .



Use of a battery-powered lift truck equipped with a "Transveyor" platform has halved handling time in a California lumber yard from the previous method. Formerly it took three men and a regular lift truck to carry timbers from the laminating presses to the planer. The Transveyor, which can move sideways, has replaced dollies, eliminated manual handling and increased the number of timbers that can be carried in a load. These beams at the Ed Fountain Lumber Co. are first glued into one rigid timber and then carried by the Automatic Div. of Yale & Towne Manufacturing Co. truck and Transveyor to the planer which smooths the edges of the timber.

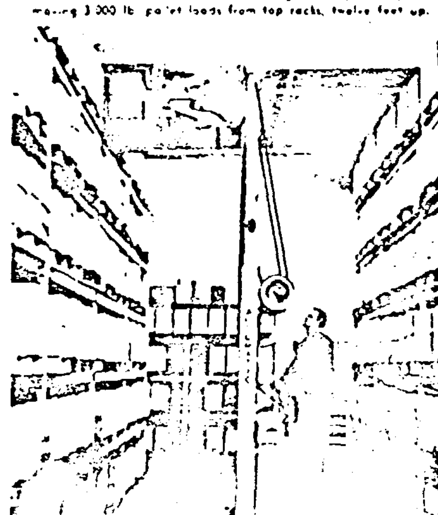
Prototype of a new type battery-powered truck for metropolitan deliveries is expected to speed deliveries while cutting costs from one third to one half. The modern, production-line-assembled "battronic" trucks, soon to appear on the market have sufficient speed and economy to outperform combustion-engine trucks in punishing stop and start service. According to the Battronic officers pictured, this is the first time a battery-powered street vehicle will be sold in the United States at prices competitive with conventional trucks. One reason is a "power metering" rental plan that saves the user from having to invest in batteries and chargers, according to the producers, Battronic Truck Corporation, 5475 Rising Sun Ave., Phila.

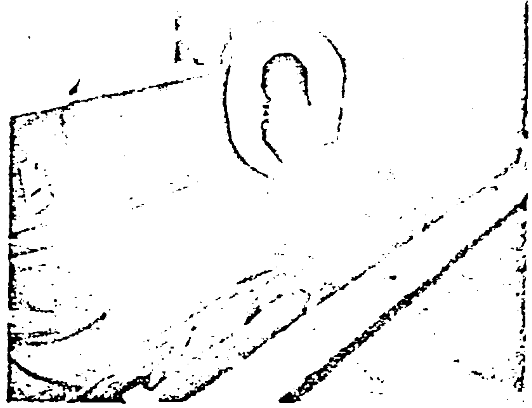




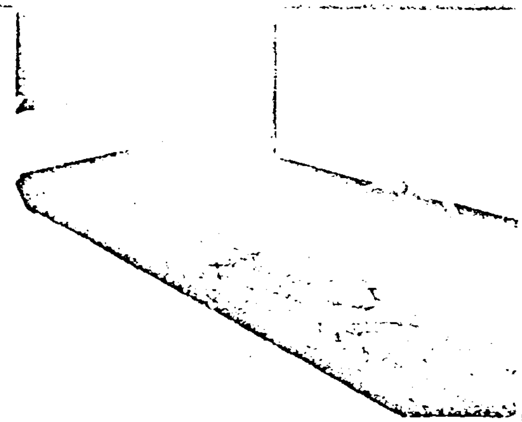
A fleet of 16 battery-powered trucks has been instrumental in breaking the last manual handling barrier at a large brewing plant. Conventionally, mechanization stops at the dock where trucks are loaded and unloaded manually. Now, palletized loads are whisked in and out of the trucks by the battery-powered lift trucks at Carling Brewing Company's new Baltimore plant. A fork truck can load or unload a trailer in minutes, but it takes a crew of five from two to four hours to do it manually. In addition, electric power enables the trucks to maneuver through all operations in the brewery without fear of contaminating the potables. Pallets automatically assembled on the palletizing machine are stored in stacks twelve feet high.

Compact narrow aisle reach trucks powered by lead-acid batteries have raised E. W. Ferry Screw Products Inc. to double its stock storage space while cutting handling time by 23 percent. The truck enabled the company to discard its outdated shelf storage system with wide aisles and substitute a narrow aisle system with palletized racks that uses high air space for storage. The reach truck works easily in the seven-foot aisles and saves order-filling time by quickly removing 3,000 lb. pallet loads from top racks, twelve feet up.





Workman burns lead waterproofing to spray pipe.



Water sprays provide constant movement of water over surface of pools.

MIRROR POOLS break the monotony

The office building now being completed between 43rd and 44th Streets on the Avenue of the Americas in New York City actually "grew up." It began as a five story building, added three more stories in 1957 and will now reach its full twenty-one story growth with the addition of thirteen more floors.

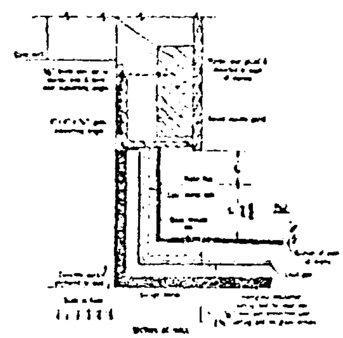
Part of this growth of course took place *within* the building, the lobby having been extended completely through the building from 43rd to 44th Streets. Since the lobby can be entered from either street, the approaches to the centrally located elevators are exactly similar. The problem of monotony was therefore the architect's first problem.

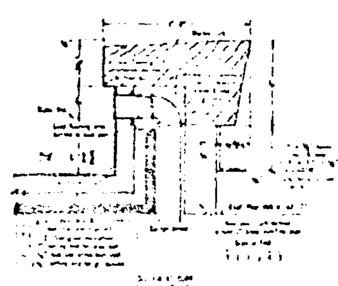
The solution was simple and direct. Pools, very nearly mirror images, were placed on either side of the banks of elevators with the water, bubbling from jets, providing a constantly changing kaleidoscope of pattern and reflected color.

Modern sculptures against a white marble background complete the assembly and create an atmosphere quite in keeping with the distinctive neighborhood of which it is a part.

The presence of a garage partly under the lobby created a major waterproofing problem to the architects once the pools had been decided upon. The solution in this case was just as direct. Eight pound lead was used throughout, a total of about four tons. All joints were burned and the lead was protected both sides with a coat of asphaltum. Detail sections show a careful regard for good practice.

Architects: Kahn & Jacobs
Mech. Eng.: Syska & Hennessy, Inc.
Lead Work: John F. Abernethy Co.
General Contractors: H. R. H. Const. Corp.
Plumbing Contractors: J. L. Murphy

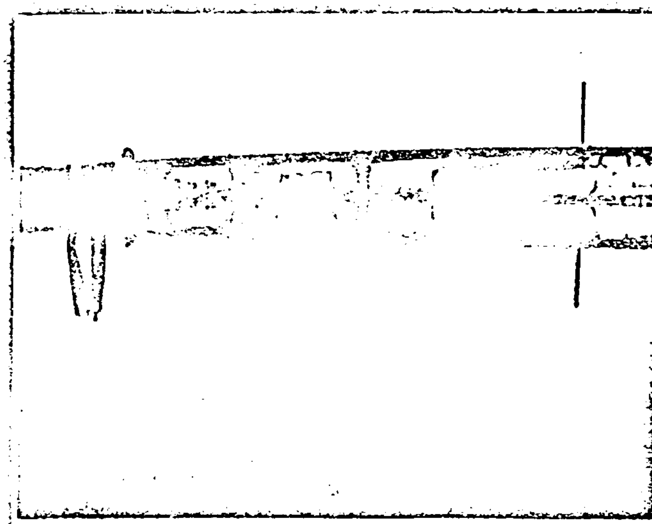




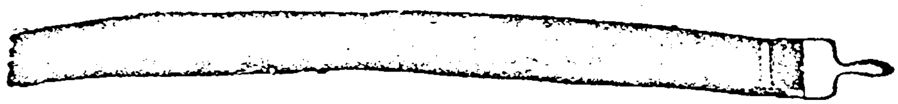
CREDIT WHERE CREDIT IS DUE

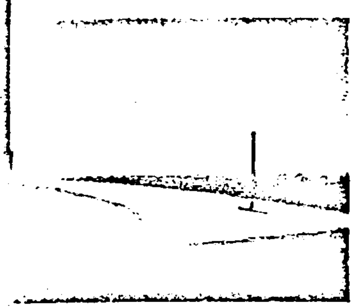
In the last issue of LEAD, principals, architects, and contractors for the new Prudential Building in Boston were listed with the story of lead-asbestos anti-vibration pads for the new building. The editors erred in omitting the most important of the contractors, the manufacturers of the lead-asbestos pads themselves. These were made by —

Knapp Mills, Inc.
23-15 Borden Avenue
Long Island City 1, N. Y.



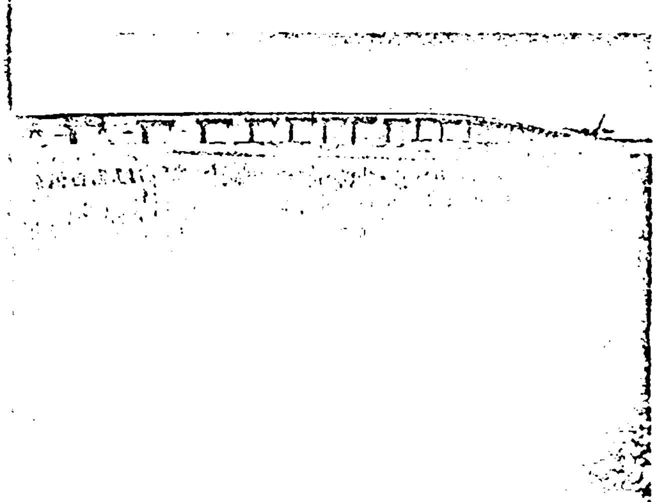
Route 80 bridge is part of the Interstate Highway System that goes to San Francisco. As it crosses the Hackensack River (pictured) it spans 190 ft. and is 50 ft. above mean high water.





Another view of the Route 80 bridge. Nearly 80 tons of red lead were used to prime the structural steel of this bridge. Superstructure: American Bridge Div., U.S. Steel Corp. Substructure: Conduit & Foundation Corp. (at left)

5,000 gallons of red lead paint were used to prime the steel of the Route 3 bridge (shown here and on the cover). It is the first in northern New Jersey to be equipped with low-level fluorescent lights. Superstructure: Phoenix Bridge Co. Substructure: J. Rich Steers Inc.



Back in 1682, when the General Assembly of the Colony of East Jersey passed an Act for "making and settling of highways, passages, landings, bridges and ferries . . . fit and apt for travelling," even that far-sighted little group couldn't have foreseen the vast 2,000 mile network which now makes up the New Jersey State Highway System.

In 1964, New Jersey's state highways carried an average of 12,425 cars per mile each day, or more than five times the national average.

Faced with these impressive figures — plus the prospects of a 60% increase in automobile registration by 1975, New Jersey's State Highway Department has been building new roads and improving existing facilities.

New bridges are an important part of this expanding road system in New Jersey, and two of the latest are the $69 million Interstate Route 80 bridge and the Route 3 bridge, both of which span the Hackensack River in northeastern New Jersey.

More than 13,000 gallons of paint were required to cover the structural steel on the Route 80 bridge alone, and two-thirds of that was the shop and field coat of red lead primer. The Route 3 bridge was also protected with a shop and field coat of red lead paint.

Over 8 million lb. of structural and reinforcement steel were used to build the Route 3 bridge and it required more than 5,000 gallons of red lead shop and field coat paint.

The paint used in both cases conformed to the New Jersey State Highway Department Standard Specifications for road and bridge construction; Federal Specification TT-P-86a, Type I; and AASHO Designation M 72, Type II.

ORGANOLEAD COMPOUNDS

Rediscovery of useful materials is something of a commonplace in this century. DDT and penicillin are two examples of so-called laboratory curiosities which gathered dust for years before their remarkable usefulness became clear.

It was this familiar fact that lead to the undertaking of a study of lead chemicals under the direction of the International Lead Zinc Research Organization* at the Institute for Organic Chemistry TNO in Utrecht, Holland. Of the hundreds of organolead compounds studied in this program, four have shown such promise that they are now being produced in limited quantity for evaluation.

The four related compounds are combinations of lead with the familiar aromatic chemical, benzene, and are thus called lead aromatics or aryllead compounds. Their structure is analogous to the most common alkyl lead, tetraethyl lead, which is widely used as an antiknock additive for gasoline.

The full descriptive names of the four are:

tetraphenyl lead	$(C_6H_5)_4Pb$
hexaphenyl dilead	$(C_6H_5)_6Pb_2$
triphenyl lead acetate	$(C_6H_5)_3PbOOCCH_3$
diphenyl lead diacetate	$(C_6H_5)_2Pb(OOCCH_3)_2$

Preliminary screening has indicated that all four are generally useful in the following applications: antifouling biocide for marine paints, pesticides, heat and light stabilizers for polymerized chlorinated hydrocarbons, catalysts for polyurethanes and for esterification generally, and as producers of chemical radicals.

Their usefulness as toxicants is an indication that they should not be handled by inexperienced or uninformed people and proper precautions in handling materials of this kind are recommended. These include protection against ingestion, inhalation and skin absorption.

Though supplies of the compounds are limited, they will be made available on request for user evaluation. Inquiries should be directed to Prof. G. J. M. van der Kerk, Institute for Organic Chemistry TNO, 79 Croesestraat, Utrecht, The Netherlands. All inquiries should be accompanied by a description of the field of application to be tried and the plan for evaluation.

PROPERTIES OF ARYLLEAD COMPOUNDS

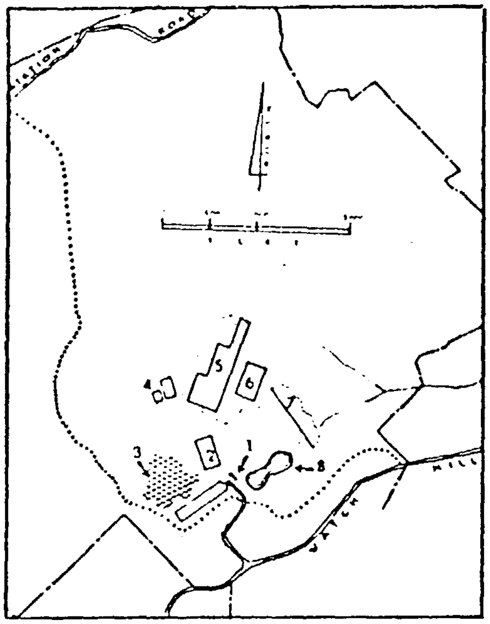
Name	Crystal color	m.p.	Preferred solvent for recrystallization	Stability	Solubility grams per liter								
					water	ethanol	pyridine	dioxane	acetone	ether	chloroform	benzene	hexane
tetraphenyl lead	colorless	225°C (decomposing)	chloroform (1 g in 15 ml)	very good	insol.	0.1	7.5	12	0.8	0.7	17	9	0.6
hexaphenyl dilead[1]	faintly yellow	decomp 150°C	Chloroform (1 g in 5 ml) ppt with equal vol ethanol	slow degrad. if exposed to light	insol.	0.4	100	125	9	6	340	75	0.9
triphenyl lead acetate[2]	colorless	206°C (decomposing)	acetone (1 g in 25 ml)	very good	0.15	5	175	32	6	0.7	50	4.5	0.4
diphenyl lead diacetate[3]	colorless	212°C (decomposing)	acetone, 5% acetic acid (1 g in 10 ml)	very good	7.5	100	190	90	20	0.9	425	14	0.1

1) Decomposes on heating into lead and tetraphenyl lead. Decomposition starts at about 90°C and is fairly rapid at 150°C.

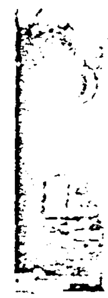
2) Triphenyl lead acetate is a fairly strong base.

3) Formula as given in body of the article, but can also be obtained with one mole of acetic acid of crystallization. Without the acid of crystallization this is a weak base and may hydrolize to some extent in water.

*[illegible] the Exploratory Research Program [illegible]



Overall map of the Sportsmens Center shows: 1 — the lodge at the head of the sole entrance road, 2 — a 60 yard archery range, 3 — a 28 point progressive archery range, 4 — pistol ranges, 5 — the large bore 100, 200, and 300 yard ranges, 6 — small bore range, 7 — the skeet and trap area, 8 — the casting pond. Note that all the shooting ranges fan outward from a central point and all shooters must pass through lodge checkpoint in order to get to any range.



View of the lodge from the parking lot (at right).

PLANNING

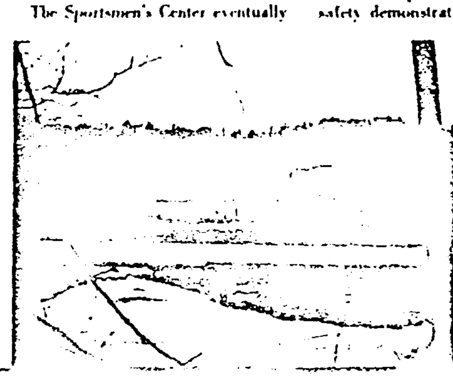
A G

THE CONSTITUTION gives Americans the right to own and carry firearms, yet the average city-dweller never has a chance to enjoy shooting or learn the rules that make it safe and satisfying. What Scout Troop or Boys' Club wouldn't welcome the chance to do some supervised shooting? Industrial plants with organized clubs and teams have found shooting as popular as bowling.

Charles E. Pound, Commissioner of Parks in New York's Westchester County, and Charles E. Rapp, Director of Parks and Planning, recently built a budget-priced Sportsmen's Center combining shooting, archery, and a casting pond. They laid down these fundamentals in undertaking the project:

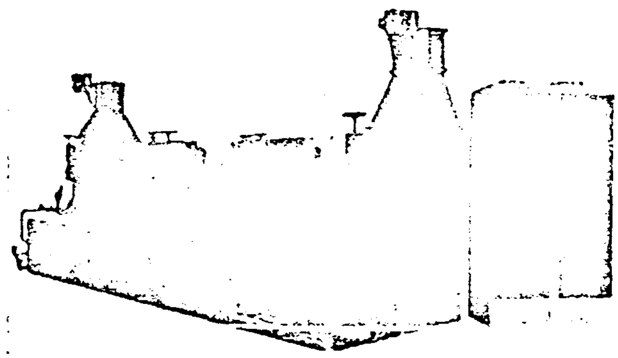
- Determine the need (it's estimated that 50,000 people may make use of the Sportsmen's Center).
- Select a remote site – if possible, have a mile or so of "no man's land." The Sportsmen's Center not only has this buffer zone, but 1500 warning signs to mark it off, along with high fences in the most trafficked area.
- Willingness of the founding officials to take responsibility for any unfavorable public reaction – usually from those least familiar with shooting. The guiding philosophy must be that the most good is being done for the greatest number of persons.
- Establish who has the legal right to build the facility.
- Use good judgment in selecting a site.
- And most important, live up to the continuing responsibility to maintain safety.

The Sportsmen's Center eventually will have two separate 16-station pistol ranges of 15 and 25 (combined), and 50 yards; ranges for large bore guns of 100, 200, and 300 yards; a 45-station range for small bore at 50 or 100 yards, and four fields for trap and skeet shooting. In addition there is a fly and bait casting pond and two archery ranges for target and field archery. Beyond pure recreation these facilities will be used: to instruct hunters so that they can pass the safety examination required by the state; for police practice, and for safety demonstrations.



Marksmen fire fro[illegible] shed in the foregrou[illegible] and 200 yard targets large bore range c[illegible] seen at center. A [illegible] banked earth behind misses.

Papermesh [illegible] covers banked ear[illegible] the pit until grass has a c[illegible] to grow. Depth of t[illegible] (note woman holding[illegible] is generous for safety



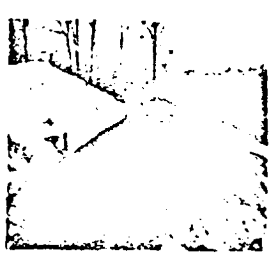
Ultrasonic Strip Cleaner and automatic tuning generators that feed power to machine's lead zirconate-titanate transducers individually. Note hand screws for adjusting internal rollers to accommodate varying thicknesses of steel strip.

...UN CLUB

Other facilities at the center include a main lodge with snack bar, a concrete block ammunition storage room, and a parking lot. Though the price tag of the center was set at about $400,000, it has been built for under $250,000. The saving is largely the result of Commissioner Pound's concentration on utility and safety to the exclusion of frills, and Mr. Rapp's tireless planning and efforts to stay within the $250,000 appropriated for the project.

The center plans to be in operation by early fall 1963.

...n the ...d, 100 ...of the ...on be ...kill of ..., stops



...for ...hance ...he pit ...sign) ...state.

ULTRASOUND

Shrinks a pickling line

In the fabrication of steel, hot-rolling tends to cause "mill scale" or surface oxidation to form. This oxidation or scale is then removed before the next operation — cold rolling — is carried out.

While it sounds very simple, the successful removal of mill scale (pickling) is a major step in steel fabrication. And, up to now, it has required shot blasting, or some other method of loosening scale, recoiling and then soaking in several vats of acid to complete scale removal, rinsing, and drying.

In order to get around this complicated procedure, the Carpenter Steel Co., of Reading, Pa., has installed the first production model ultrasonic pickling line for continuous strip. While the unit still works in conjunction with a shot blaster and an acid bath, thanks to ultrasonic energy and the lead zirconate-titanate transducers that produce it, pickling is done rapidly at a lower cost — and the finished product is uniformly cleaner.

Not only that, but to have established the same operation on a continuous basis with straight acid-type pickling would have required a great deal more space; initial equipment costs would have been higher, and the disposal problem created by the spent acid would have been greatly magnified.

What happens is this: shot-blasted steel strip is fed into an alkaline solution at one end of the 18-ft. long machine, and from there it goes between a battery of 20 lead zirconate-titanate ceramic transducers vibrating at approximately 25,000 cycles per second. With ten of these 250 watt transducers vibrating in the solution on either side of the steel strip, the remainder of the scale not knocked off by shot blasting is easily removed by ultrasound. While still in the machine the steel is rinsed and "damp dried" by means of a high pressure air knife — all of this at a maximum rate of 100 ft. per minute.

Two acid pickling baths follow right in line after the ultrasonic cleaner, and, depending upon the material being processed, may or may not be used. After that, the strip is given a final rinse, dried and coiled.

The ultrasonic cleaner was built and developed by P. C. S. Div., National Ultrasonic Corp., Somerville, N. J., specialists in the field of ultrasonic cleaning. While there are other transducer materials available, National Ultrasonic chose lead zirconate-titanate because it has proved to be about the best piezoelectric material available. And it has been found to be especially important for applications involving high power levels over wide temperature ranges.

Men at work installing the enclosure give some idea of the size of each of the transformers. They stand about 14 feet high. The enclosure is about 5 x 10 x 14 feet.

TRANSFORMER

lead-steel-glass fiber housing developed at Portland General Electric lops 15 to 20 decibels from transformer's hum

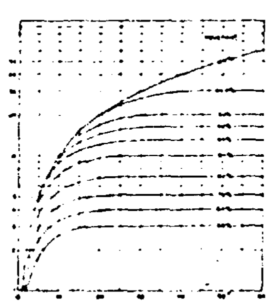
Electric power, and the utilities that provide it, are taken very much for granted. One of the few times when people notice either is when a new transformer or substation is installed in a quiet neighborhood. All transformers hum. If the environs are quiet enough and the transformer noisy enough, there is a noise problem — a problem which the utilities may pay thousands of dollars to correct in just one installation.

Until now the power company has followed one of two usual paths in subduing such noise. First, the transformer can be replaced with specially built equipment having a lower noise rating. These units are expensive, take time to procure and, of course, mean additional costs for removal of the noisy transformer and reinstallation of the new one. The second approach is to build a partial masonry enclosure with acoustic treatment and with or without the addition of supplementary panels to the transformer. While this may not cost as much as the low-noise equipment, it has the drawback that any decrease in sound level in one direction is accompanied by an increase in another. Often, too, it means that supplementary cooling must be provided — an expensive extra if remotely located radiators are needed.

When Portland General Electric Company received complaints about a bank of three single-phase autotransformers, the first step was a sound level survey to see whether the complaints were valid. Often such a survey will show that the noise problem is trifling, the complaints stemming from resentment that the unit was built at all. Landscaping is often the "solution" to such "noise" problems. In this case though, readings taken between midnight and 4 A.M. showed that there was valid reason for the complaints. Four locations at from 140 to 500 feet from the transformers showed noise levels increased from 10 to 19 decibels above the minimum nighttime level.

In a technical paper presented to the Institute of Electrical and Electronic Engineers, Mr. P. N. Adkins of Portland General Electric described the decision made then in these words: "In consideration of plans for future system additions, and recognizing the probability that noise problems would arise with increasing frequency in the future, the decision was made not just to solve this problem, but to become familiar enough with transformer noise problems in general that analyzing and prescribing treatment for future problems would be relatively painless."

PGE investigated surrounding the transformer with a close-fitting noise barrier. The idea was to contain the noise but keep the enclosure small enough so that the radiators could remain in their normal positions. Several conditions had to be met if the scheme was to work. First, it had to be possible to build enough sound transmission loss into the barrier to solve the problem. Second, the sound build up inside the enclosure had to be held to some reasonable value. Third, the transformer had to continue to function effectively. And finally, the cost had to be commensurate with the results.



The plotted data shows the severe penalty paid for even small gaps in the enclosure. As an extreme example, note that a 40 decibel barrier which covered as much as 90 per cent of the source would only produce a 10 decibel attenuation.

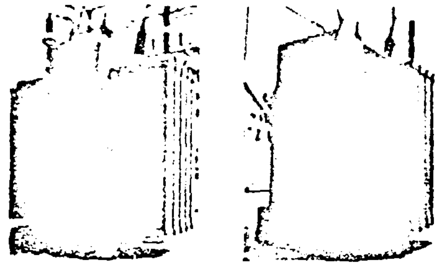
Theoretical examination of the pl[illegible] brought home the importance [illegible] complete coverage of the unit. The importance of even small gaps in the barrier can be seen in the plot opposite. If a 20 decibel attenuation is sought and a 30 decibel barrier is used, the extent of coverage must be at least 99 per cent.

It was realized that the last few per cent of area would be covered only at increased cost and trouble — especially in view of the valves and gages which had to be accessible.

To stop the build-up of sound within the enclosure, it was planned to mount a two-inch thick blanket of glass fiber approximately one inch inside the inner face. It was estimated — and subsequently verified by measurement — that this would hold the build up to 3 decibels.

In selecting materials for the barrier walls themselves, the "mass law" of acoustics indicated that the heavier the barrier, the more sound would be stopped. The mathematics of the situation are quite complex, however, since in order for the mass law [illegible] accurately predict performance of [illegible] barrier a construction had to be found which would not resonate at or below the frequencies in question.

ENCLOSURE HOLDS NOISE IN



Before and after pictures of one of the three transformers. The enclosure (right) cut 17 decibels from the noise.

(For a 60 cycle per second power line, these are 120, 240, and to a slightly lesser extent 360 cycles per second.) Lead, bonded to steel with adhesive, was chosen as the barrier wall because of its weight and because it tends not to resonate.

The three transformers, each with a maximum rating of 41.7 MVA in stepdown service, dropping 115 kv to 57 kv, were identical. They stood about 14 feet high. The plan was to complete the enclosure for one, then go ahead with the other two, profiting by the experience gained. The barrier material was made by laminating 10 gage steel to four-pound (1/16 inch) lead with an epoxy adhesive. This was formed and cut into fitted sections. The enclosure and its frame were built to be free standing and isolated from the transformer.

Isolation of the barrier in a design like this is quite important because any mechanical coupling between the barrier and the transformer would have permitted vibration to travel into the wall and reradiate as sound. For this reason pipes and fittings piercing the walls were isolated from them by compliant neoprene gaskets. The transformer itself was supported on rubber pads so that vibration could not travel to the walls via the foundation. The metal roof of the enclosure was the only exception to this practice. It was intentionally fastened to the top of the transformer at a point where vibration was minimum. This was possible because the roof was flexible and would not transmit vibration to the walls well, the small top area of the transformer did not actively vibrate due to its high mass (it carries heavy bushings), and it, in turn, is partially isolated by the gas-filled cavity under it.

After completion, but before the radiators were reinstalled, the transformer was tested. The result was a reduction in noise of 22 decibels. When the radiators were again installed the noise rose, of course, but a net gain of 17 decibels remained. Calculation showed that it was not practical to seek improvement with a better barrier unless the radiators could be isolated from the source.

Based on these results, work went ahead on the additional two transformers. Less supervision was given these jobs and when they were tested it was found that they were three to five decibels noisier than the first. The fault was found in spot contact between the enclosure and the transformer. When this was corrected the performance improved.

Tests were then made to see if the thermal insulation would cause the transformers to run hot. It was found that second and third stage cooling came into action earlier than before, but prolonged tests also showed that the maximum load did not cause the transformers to run hot.

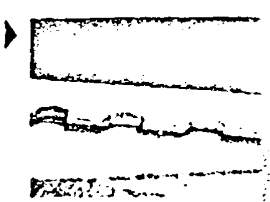
Based on the success of the scheme, Portland General Electric is now planning to treat a large three-phase transformer having the same rating as the whole bank described here. Among the modifications planned for the new unit are enlarged clearance between the transformer and the radiator to ease installation of the enclosure and perhaps give a bit more isolation to the radiator. It is also planned to change the ratio of steel to lead in the barrier. The same weight per square foot will be maintained, but the amount of lead will be greater.

In reviewing the original design goals it can be seen that enough transmission loss was realized to solve the problem. Sound build-up inside the enclosure was controlled. The transformer suffered no loss in capacity as a result of the treatment. And finally, the cost was commensurate with the results.

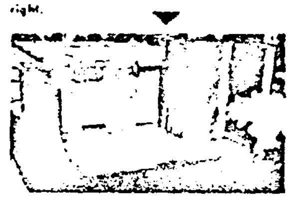
The actual cost of treating this transformer bank was $21,000 — about 0.3 per cent of the cost of the transformer per decibel of noise reduction achieved. Special low-noise transformers, according to PGE's figures, cost 1 to 1.5 per cent on the same basis. The partial solution available through use of a three wall masonry barrier and supplementary panels for the transformer would have cost about 0.7 per cent.

Copies of Mr. Adkins' paper before IEEE, "Transformer Noise Reduction with a Close-Fitting Mass Law Enclosure," are available through Lead Industries Association, Inc.

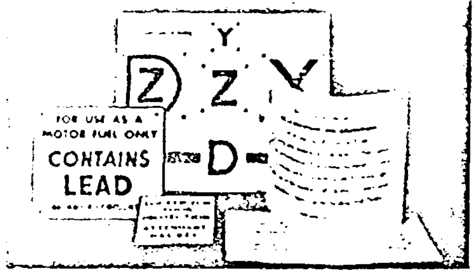
A section of the enclosure ready for installation. It is made up of 10 gage steel, 1/16 inch lead, and two inches of glass fiber spaced off from the inner face.



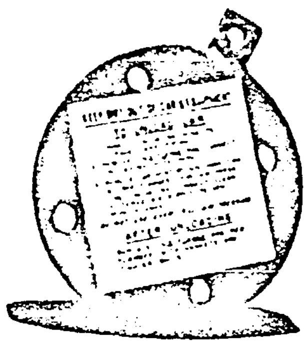
In order to get a good tight fit, fairly complex sections were made. This one, showing the lead inner face fits just under the radiator. A mirror image of it can be seen in the picture at upper right.



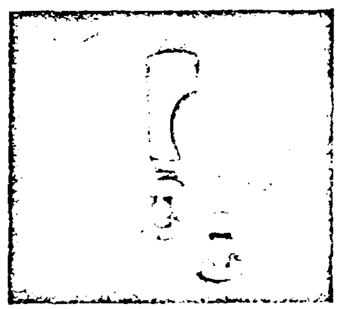
How porcelain is working for design engneers!



Tenacity of leaded porcelain is shown in this photo of a variety of signs in green, red, yellow, blue, and, of course, black and white. Applied on thin aluminum sheet, the leaded porcelain doesn't chip or pop off, even when the signs are bent to fit contours of posts, railings, etc. Many such signs are in use aboard ships, in chemical plants, mines, on highways and anywhere corrosion is a problem.



Chemical resistance of leaded porcelain is demonstrated by this application. Also, the fact that these enamels were fired on this heavy aluminum casting proves their versatility. This cap is to be used to seal a chemical tank car opening and it is important that the instructions be preserved for the life of the car.



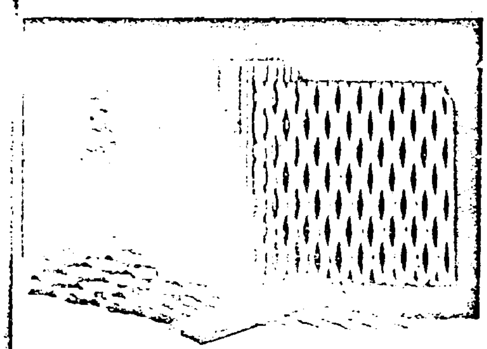
Excellent electrical properties fit leaded porcelain enamel to scores of applications like the blue and white tube shield cans. Made by impact extrusion of aluminum, the cans were quickly and easily coated without distortion by a permanent porcelain finish. Also shown are two spools of porcelain enameled wire. Leaded porcelains are ideal insulators — and they work on platinum, silver, copper and other conductive metals as well.

Now that porcelain enamel on aluminum has come of age (it has been approximately 15 years since this superior coating was first commercially applied), many diverse and interesting applications are being made with it.

For those who are not familiar with it, this porcelain is similar in many respects to the porcelain you might find on your stove — it is basically a glass coating fused on a metal substrate. In the case of porcelain on aluminum, the glass is fused to aluminum at a temperature of 920 - 1000° F., the exact temperature depending upon specific composition of the enamel and weight of metal.

The glass used for coating aluminum varies in composition to fit the intended application, but nearly all contain lead, silica, lithium, sodium, titanium, and a few other glass-making chemicals intimately mixed and often prefused into small glass fragments called frits. Enamelers grind the frits, mix them with a liquid and spray the mixture on the metal. A few minutes of firing in the furnace completes the fusing operation.

This $2\frac{1}{8}$" diameter impact extruded aluminum wheel is used for the friction drive on an office machine. Leaded porcelain eliminated the problem of abrasion to the wheel's edge by a friction belt — yet, maintained the desired coefficient of friction.



Practically unlimited choice of color, great durability, thermal shock resistance, and resistance to impact all account for leaded porcelain's choice for machinery enclosures and architectural panels. Not only that — the rigidity of aluminum sheet is increased by as much as 60% by a porcelain coating. The ability of leaded enamels to cover corners and sharp radii is demonstrated by both the expanded metal and the simulated wood grain panel.

Who made them: Wire by Secon Metals Corp.; Signs by Porcenal and Hamlin Stevens, Inc.; Plates, enclosures, wheel by Hamlin-Stevens, Inc.

LIA23848

Interesting Odds 'N' Ends . . . 'bout Lead

Lead abstracts — not recommended for light reading. But if you have a serious interest in current research and publications on technical developments, LEAD ABSTRACTS, published monthly by the Lead Development Association in London can help you keep abreast of the literature of all countries. Use the coupon on the back cover to request a sample issue, your company letterhead if you wish to be placed on the regular mailing list for it.

INSIDE THE ANTHILL . . . Ever been curious about the underground cities built by ants? So was Bill Abraham of St. Petersburg, Fla., and he did something about it. By pouring a ladle of molten lead into the entrance of an anthill and cooling the casting with water before digging it up he has managed to make good replicas of the nests. Several are pictured here. He's found quite a variety among the 100 or so types of ants and nests in the U.S. Fingers, like ants, don't survive molten lead very well — if you plan to experiment, get expert advice.

Lead draws the line . . . latest tennis court construction wrinkle is marking the lines with strips of lead. Revival of an old English method, lead is weather and wear proof, and outlasts fabric and plastic lines. Simply cut the strip off the roll, nail it down and paint it regulation white.

Lead's on the map . . . and this map is on lead! Alfred C. Dunn, renowned illustrator, watercolorist, and Professor of Art at the University of Idaho is cutting a map of the campus into a large sheet of lead. The completed map, decorative as well as useful, will be mounted for permanent display in the new Student Union Building.

Researchers at the Bell Telephone Labs have found some difficulty in soldering heavily gold plated widgetts for electronic gear. They tracked down the difficulty — when gold content of a lead-tin solder reaches 75 per cent, it becomes brittle. CAUTION: Never mix scrap gold with your solder!

Lead makes fine fibers finer! Bundles of fine glass filaments that are stronger than a monofilament can be drawn into submicron diameters (less than [illegible] in.) by a process requiring a protective metal coating. So far an arsenic-bismuth-lead alloy coating is favored by scientists working on fiber production at Armour Research Foundation.

CHANGE OF ADDRESS OR NEW READER

Use this side of the coupon if you have recently changed your address or if you would like to be added to the mailing list for LEAD

CHANGE OF ADDRESS NEW READER
(please circle one)

From
Name, title
Company
Street
City, zone, state

To
Name, title
Company
Street
City, zone, state

PLEASE CHECK INTEREST

Architectural & building
Design Engineer
Ceramics
Radiation
Other (please specify)

LIA23849

lead LIBRARY OF TECHNICAL INFORMATION

The following publications are available free of charge unless otherwise noted. Send request to the

LEAD INDUSTRIES ASSOCIATION, 292 MADISON AVENUE, NEW YORK 17, N. Y.

NEW LISTINGS

Pools and planters

Description and design details of seven modern lead lined pools and planters. Also enumerates advantages and architectural specifications. Eight pages.

Isolation of buildings from vibrations

Eight page reprint of description of vibration isolation of the Place Ville Marie Development in Montreal.

Transformer noise reduction

Design, construction details of close fitting mass low enclosure for electrical transformers. Ten pages, illustrated.

GENERAL

Discovering the beauty of lead

New uses for lead

Design engineering data

BATTERIES

Electric delivery trucks

Truck costs in a jiffy

Three nomographs for estimating costs of gas or battery powered industrial trucks

The choice of battery systems

CONSTRUCTION

Silver anniversary roofs

Case histories of 4 sheet lead roofs each with 25 or more years of service.

Building construction bulletins

1. Specifications — lead waste connections, plumbing
2. Specifications — lead shower and safe pans
3. Specifications — chemical laboratory drainage systems.

Lead work for modern plumbing

$2 postpaid, $1.50 per copy in orders of 10 or more.

Profusely illustrated 164 page text presenting clearly to the plumbing student the necessary tools, procedures and methods

Seamless terne for roofing

Sheet lead for roofing and flashing

Lead plumbing

Lead-asbestos anti-vibration pads

ENGINEERING

Materials of construction reviews

Lead and lead alloys in design and construction for research and engineering use

New ceramic data

Transducers for ultrasonics

One page reprint describes operating principle and uses.

Corrosion data — lead & alloys

Chart presentation of the corrosion resistance of lead and its alloys to 188 common chemical materials.

Methods of lead lining tanks

Four page review of corrosion performance and fabrication methods for lead.

Cutting press vibrations

Oilless bearings — helicopters

1000°F bearings

Nuclear materials

Eight page reprint from Materials in Design Engineering.

Radiation protection

Four page reprint describes shielding requirements for pipe or duct through wall openings

X-ray data — lead ceramics, part II

X-ray diffraction data for 10 lead compounds. Five page reprint.

Amazing new spark pump

Lead to control sound and vibration

FINISHES

Decorative finishes for lead

Red lead based paint systems

Properties and compositions for 24 formulations and systems for a wide variety of uses and exposures. 31 pages.

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.

Reproduced by letterpress from lead type.

PRINTED IN U.S.A.

Mail to: Lead Industries Assn., Inc., 292 Madison Ave., New York 17, N. Y.

Name, Title

Company

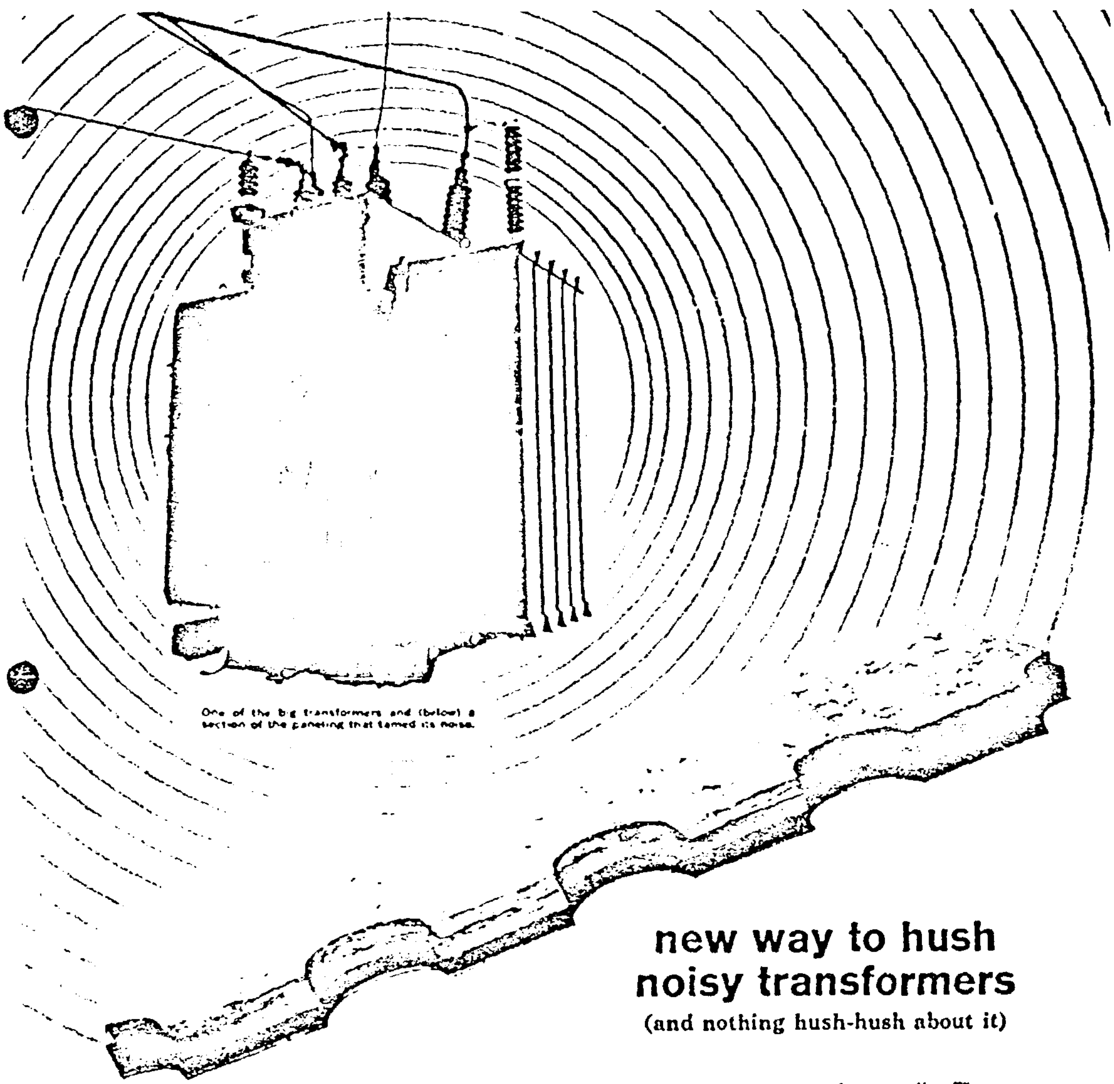
Street

City, Zone, State

Please send

TO REQUEST LITERATURE

LIA23850



One of the big transformers and (below) a section of the paneling that tamed its noise.

new way to hush noisy transformers

(and nothing hush-hush about it)

Portland General Electric has discovered a better way to quiet down the noise of big transformers—and is delighted to share it with other utilities. Basing its approach on the mass law of acoustics, the company licked a serious noise problem with free-standing, form-fitting, *nearly totally* enclosed "sandwich" panels. Ingredients of the sandwich: fiberglass, steel, and—most importantly—*lead*.

Noise reduction has been in the order of *15 to 20 decibels*. Cost was the same or better than for

cessitate no remote transformer cooling. They can be applied in the field, and can be nondestructively disassembled. They improve transformer appearance.

Portland General Electric plans more such covers. And, based on acoustic studies, will include *more* lead in the sandwich to make the panels even more effective.

An I.E.E.E. technical paper by a Portland General Electric engineer presents the technical details of this unique installation. If you'd like a copy—or