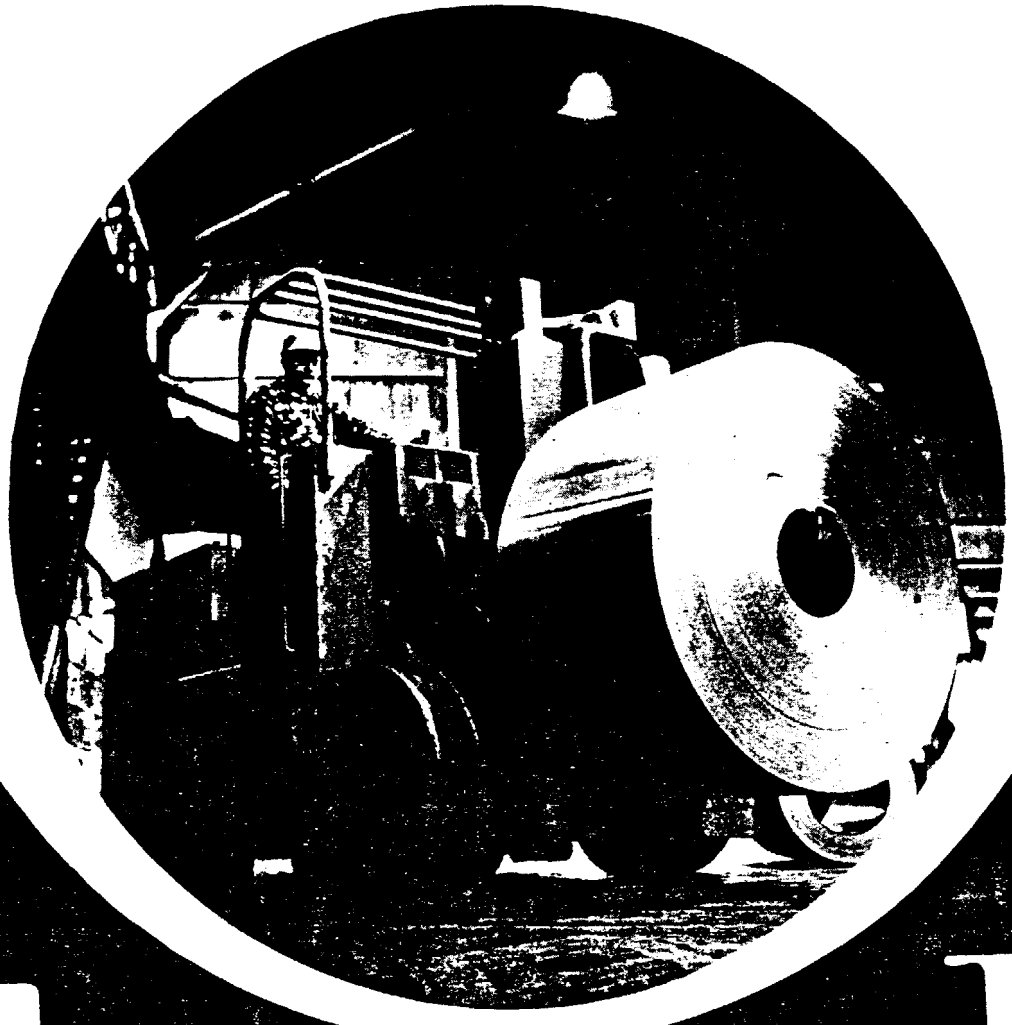
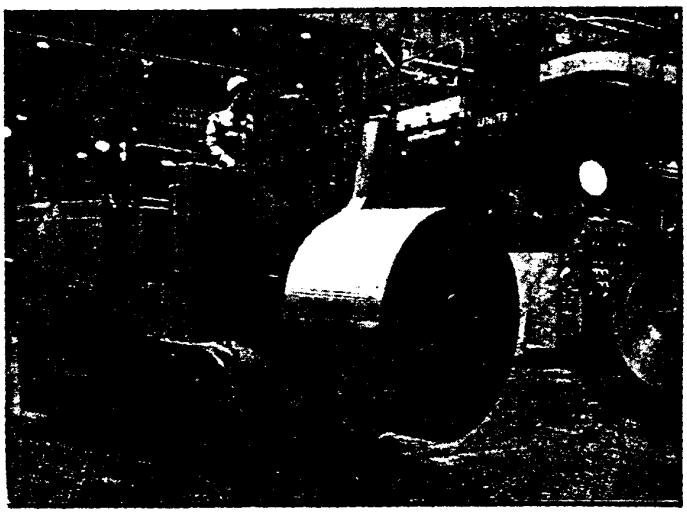


lead

LEAD INDUSTRIES ASSOCIATION, INC.



Another behemoth off and running with super-load.

BIG THINGS IN THE WORKS

There are people who have the impression that battery powered industrial trucks are used only for dainty little tasks like lifting 6000 pounds of small parts, or clamping onto an 1800 pound roll of newsprint. But it's just that they haven't been to Irvin Works of United States Steel Corporation near Pittsburgh.

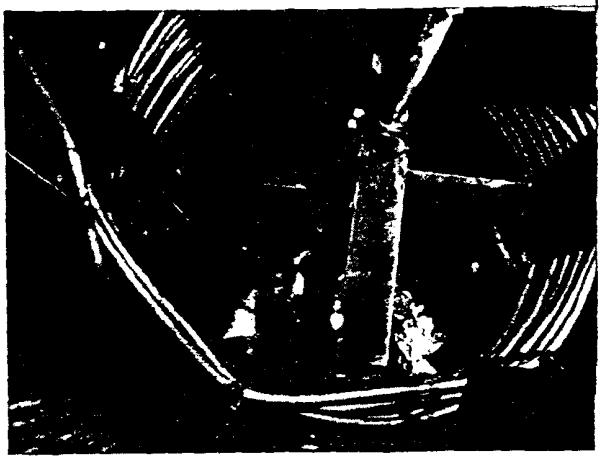
In this green valley, there are giants at work! Silent, speedy, but monstrous, these sleek trucks glide about their king-size chores three full shifts a day, seven days a week. They pause just long enough to change operators between shifts, and once a day for a battery switch. In fact, their pace is so relentless that our camerman had to snap his photos on the run!

Loads up to 35,000 pounds in coiled sheet are the order of the day and are handled with ease by the "big ones" at Irvin. They roam the plant in swift strides over wood block floors that cushion their treads. Back and forth, and up and down they go —from rolling to cutting to processing to coiling, then to bin and shipping.

The stout hearts of these bruisers —the lead-acid batteries—range up to 1250 amp. hour sizes, two to the vehicle, with the average being 1040 amp. hours. The materials handling department is now receiving replacement batteries in the dry charge state, and so is able to schedule the inclusion of the new battery into service at will. Older methods forced installation of new batteries into service immediately in order to avoid shelf loss of energy.

Plant engineering is working on a solution to the problem of standardizing battery container sizes, thus reducing the variety of physical dimensions and capacity rating necessary at present; but, all in all, they still say that "the battery boys do the big things here!"

Interior of one of the lead-lined tanks showing the cooling coil and heavy bronze agitator. Some of these tanks have been in service 40 years and still use the original sheet lead.



BOTTOMS UP!

. . . after 40 years on the job

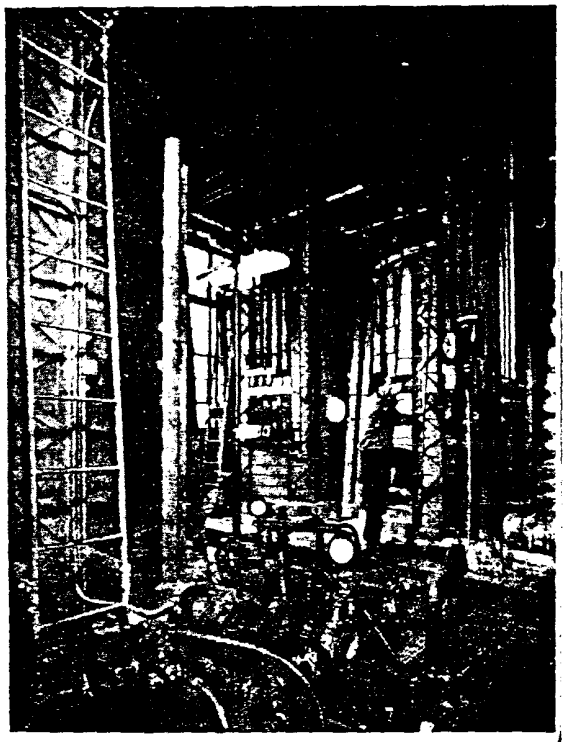
Fourteen lead lined tanks at a petrochemical plant in St. Louis are now having their bottoms and part of their sides replaced with fresh sheet lead. What is noteworthy about this maintenance is that the tanks have been holding a host of highly corrosive chemicals since they were constructed in the early 1920s. In addition to corrosive action the linings also withstood stirring and agitation. Most of the tanks are still using the original $\frac{3}{16}$-in. or $\frac{5}{32}$-in. sheet lead they started with.

The tanks were originally designed for sulfonation of fatty oils. However, as the years passed, the tanks have been used for blending a wide variety of chemicals. Among the corrosives that have been in the tanks are various combinations of the following: organic acids, sulfuric and phosphoric acids, organic and inorganic bases, etc.

The fourteen tanks are at the St. Louis plant of the Tretolite Div. of Petrolite Corp. They range in diameters from 8 ft. to 16 ft. and are all 10 ft. high. Cage type construction is utilized on all 14 of the tanks. In this type of construction, a sheet lead vessel is supported by a cage-like framework made of steel flats and angles, bolted and welded together. Much of the support is given the lead by the stack of flat steel bands that gird each tank. They are closer together at the bottom than they are at the tank top to offset the greater hydrostatic pressure there.

The work now in progess consists of replacing the lead bottoms and about six ft. of the lead sides in some of the tanks. At the same time, any repairs or maintenance work necessary will be done on the two-in. lead cooling coils or the large agitators in each tank.

Larry Goad and Co., St. Louis, is doing the lead work at the Tretolite plant. According to Mr. Goad there are several distinct advantages to this type of tank construction. "Lower materials costs make this type of construction using $\frac{1}{8}$-in. or $\frac{5}{32}$-in. lead competitive with other materials and other types of tank construction. And assembly in the field is considerably easier since handling of large, heavy steel sheets is eliminated." In addition, he enumerated several other advantages. The open framework permits leaks to be easily found and repaired from the outside without necessarily draining the tank. The outside of the tank can be hosed down to remove corrosives or other dangerous chemicals. Also the open construction makes the tanks effective means of cooling liquids that are received hot or where heat is generated by the reaction. "And, we should point out," Mr. Goad continued, "that this type of construction permits the sheet lead to expand and contract relatively independently of the expansion of the steel frame."



Checking the temperature of a large cage-type lead tank. Note that the steel supporting hoops are close together at the bottom and separate at the top where less support is needed.

LIA26450

Isotopes at work—1966

Strawberry irradiator

Radiation processing of food to halt spoilage and to extend its refrigerated shelf life is now becoming an important practical reality. Grain has been successfully deinfested of insects; potato and onion sprouting has been halted by exposure to gamma radiation from a radioactive isotope, usually cobalt-60.

The finned lead source cask showing both the cask and mechanisms that move the source (right). The hydraulic power unit that moves produce through the irradiator is located at far left.

One of the most efficient ways of processing produce is to build an irradiator small enough so that it and its attendant shielding, conveyor, refrigerating, ventilating and instrumentation systems can be hauled to the harvest area on a flat bed truck trailer. This can change the whole distribution set up when the produce can be irradiated as it is packaged and shipped to markets that may be as far away as the other side of the United States. For example, fresh strawberries harvested in California now have to be rushed across the continent in costly high speed service refrigerated railway cars, distributed and sold in from four to six days.

Now, a new mobile irradiator is being started up and checked out by the University of California at its Davis Campus that will double the berries shelf life so they can travel by conventional refrigerator car shipments. Equally important, spoilage will also be cut from 15 to 25 per cent to as little as 5 to 10 per cent.

The Mobile Gamma Irradiator (MGI) was designed by Vitro Engineering Co., Div. of Vitro Corp., who also supervised the actual construction of the irradiator and shielded source cask and other shielding by the Lockheed-Georgia Co. Sponsor of the project was the Department of Isotope Development of the United States Atomic Energy Commission.

The mobility concept in irradiator design has already been described in LEAD.* However the MGI source configuration and intensity, mechanical handling technique and the overall irradiator configuration is different.

The cask can be removed from the main irradiator body shielding and serve as the shipping cask for the cobalt-60 source at time of initial startup and again at two year intervals when the fuel has to be replenished.

The source cask and main body of the irradiator are together approximately 16 ft. long. Both are lead filled steel weldments. The 13-ft. long, 4½ ft. wide main body weighs approximately 80,000 lbs. Cooling coils carrying brine at approximately 30°F are embedded in the lead.

The source cask is slightly over 4-ft. long and 4-ft. wide. It weighs approximately 15,000 lbs.

In operation, the irradiator can process approximately 1,000 lbs. of produce per hour and irradiate them with a dose of from 175,000 to 225,000 rads.

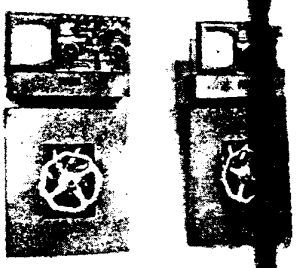
An irradiation cycle starts with the cobalt-60 source in position and aluminum carriers containing the strawberries coming through into the truck on a conveyor belt. When they reach the outside of the irradiator they are elevated into a shuttle. This shuttle is then moved into the irradiator body by a hydraulic cylinder. Once inside the irradiator b carrier is moved over and u radiating source. On compl total irradiation time, which from product to product, the is withdrawn from the ir body. The product carrier deposited on an output elevato lowers it to an output convey output conveyor returns the p carrier to the loading station workmen return it to refri storage.

* "Hot Potatoes", LEAD, 1965, V.29/No. 3

Isotope sterilizers for biomedical use

Radioactive pharmaceut among modern medicine's must be sterilized since they used within the human body in noses and treatments of man's stubborn ailments. Sterilizatio turn, creates the problem of shie the sterilizers so that operator work in safety.

When Abbott Laboratories, Chicago, Illinois, were faced this problem, their scientists turne engineers with Wigton Abbott C pany at Plainfield, New Jersey the American Sterilizer Comp Erie, Pennsylvania, for the design manufacture of completely shiel sterilizing equipment and the de of the complete area.

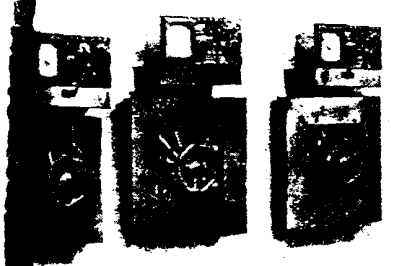


...r of door shows overlapping con-...tion of the sheet lead.

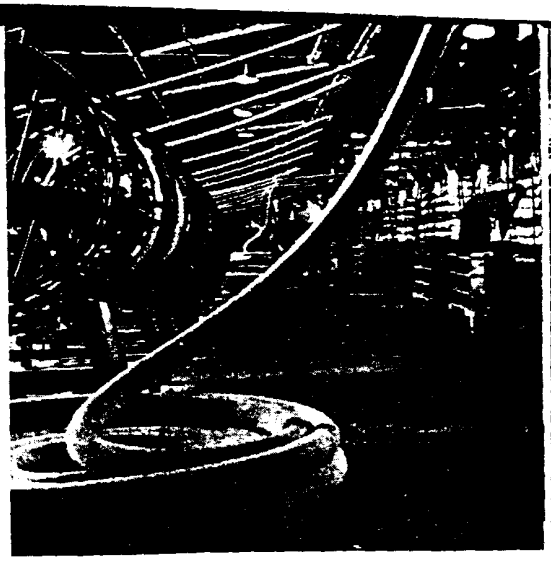
Five American square pressure ...am sterilizers were specified for ... job. These sterilizers were re...ssed in a wall fully lined with 1/4" ...ck lead. An overlapping frame ...ade of 1/4" thick lead was fitted to ... exterior of the door. The neces...rily exposed hand wheel and lock...g arms were shielded by a 1/4" ...ck sheet lead on the inside of the ...or.

Lead was the shielding material ...osen, stated an AMSCO spokes...an, because "its density provides ...re radiation shielding per unit of ...kness than any other available ...terial. It is also easy to fabricate ...d adapts to existing equipment at ... minimum extra cost."

...e bank of five sterilizers for radioactive ...topes recessed into a lead lined wall.



LEAD SPEEDS HOSE PRODUCTION



Newly extruded rubber hose, seen on the pans at the right, go through the weaving machines (behind the spools) and exit with a tightly woven fabric casing.

A new half million dollar lead casing facility is helping the National Hose Company, Dover, N.J. encase long lengths of reinforced rubber hose in lead and ready them for vulcanization as fast as batteries of rubber-extruding machines and cord braiders can make the raw constructions.

In the process lead serves actually as a tool—rather than a material—that is usable over and over again. The only "wear" or depreciation on this tool is the small amount of oxide formed, which is skimmed off the molten metal in the melting kettle as dross.

Heart of National Hose Company's new equipment is a giant lead press, one of the largest in the United States, capable of encasing 3,000 feet of 3/4-inch hose without recharging.

In making the reinforced-rubber hose for pumping gasoline, solvents, and chemicals, a "construction" is first built up with successive layers of uncured rubber and braided or wound textile cord or wire.

The assembly of uncured rubber and reinforcements must next be cured, or vulcanized to harden the rubber, and cause it to grip to the reinforcement plies, and give the hose its permanent shape.

But before uncured hose can be placed in a vulcanization chamber its shape must be preserved.

Here is where lead is used. Lead's low melting point, and its easy formability make it an ideal reusable encasement material.

A length of new hose construction to be encased is threaded through the die in the press. Hydraulic pressure, forces a billet of lead into the die cavities and uniformly around the hose.

Unalloyed lead is used, to give the maximum formability. Under the pressure of the plunger, the lead is at a temperature of approximately 375°F when it contacts the hose in the die.

A spool of lead-encased reinforced-rubber hose being moved into a vulcanization oven. The oven is steam-heated to approximately 300°F.

Vulcanization is accomplished with steam heat at 300°F. A vulcanization cycle requires 45 min. Internal water pressure is used during vulcanization to keep the internal face of the hose from blistering or collapsing.

In addition to giving National Hose, wholly owned subsidiary of the Dayco Corporation, capacity for increased production, the lead-encasement method lowers production costs and minimizes defects.

Office Planning & Design: Rodgers Associates, New York
Associate Architects: Eggers and Higgins, New York
General Contractor: Gilbane Building Company, Providence, R. I.
Gypsum partition & lead barriers: Wallboard Construction Company, East Natick, Massachusetts

Isometric showing light sheet barrier hung from slab and head of partition below.

QUIET PLEASE!

The term "astute" is one we very frequently find associated with bankers. They have to be. The sagacious use of the money entrusted to them is the hallmark of a successful banking operation. But what happens when operations involve their own funds? Would they watch construction of facilities to house their own affairs with the same scrupulous care given to investment of funds intended to yield a calculated return? A good place to find out was the new quarters built for the State Street Bank and Trust Company in Boston.

This handsome tower, whose major tenant is the bank, designed by Pearl Street Associates, a joint venture of F. A. Stahl and Associates, Hugh Stubbins and Associates and William J. LeMessurier and Associates, is 34 stories tall. Built of concrete and glass at an approximate cost above $30,000,000, its superb location is intended to provide close contact with the patrons and business interests associated with the bank in this area for many years.

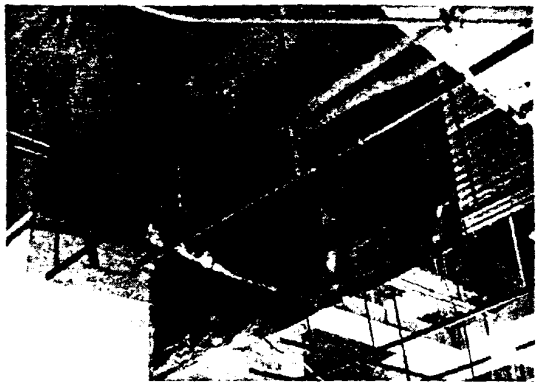
Interiors for the bank were designed by Rodgers Associates of New York City whose attention to detail was matched only by the supervisory personnel of the bank itself. No item was too small to escape the scrutiny of this team for use, appearance and economy without sacrifice of quality. Office partitions were one of these items. Carried only to the hung ceiling height, they were terminated at that point in order to enhance flexibility of partition arrangement.

There were two types of partitions used in this job: one a standard metal partition, the other a gypsum laminate. In either case the problem of passage of sound up through the ceiling, over the top of the partition and down through the ceiling on the other side was of paramount importance. There are several systems possible to use in solving this problem. The most recent, inexpensive, effective and more increasingly used, is thin sheet lead hung from the slab and dropped to the ceiling juncture with the partition be

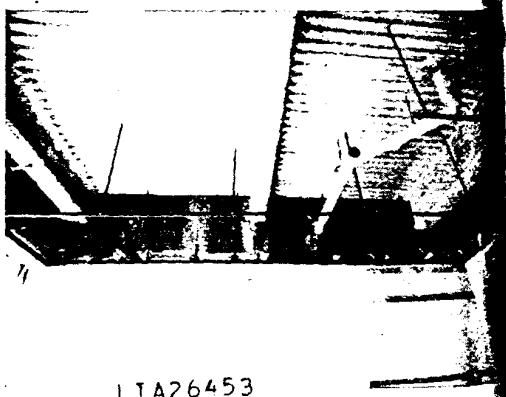
Lead's capability for sound ation is well known. Its comb of limpness, mass and forma preeminent. A total of about square feet of one pound she barrier was used. Installati lowed specifications included Industries' bulletin: "Practic plication of Sheet Lead for Barriers." Desired lengths o lead, about three feet wide, w several inches longer than th tance from the slab to the pa top. These were then folded ov wood battens and attached to cleats fastened to the underside floor slab above. About one in drape resulted at the bottom served as a seal over the par head.

Penetrations through this b were easily handled with no more than a scissors to provide or apertures for pipes or ducts. of duct tape were used to seal

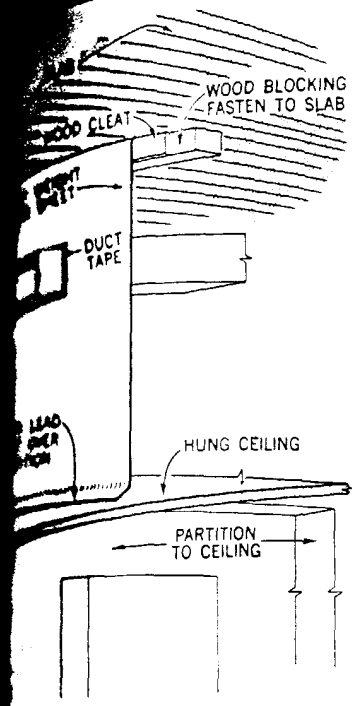
Sheet lead barriers before installation of partitioning below. Note ease of joining intersecting surfaces, taping vertical joints and sealing penetrations.



Plenum sound barrier using easily fo sheet lead, cut and snugly taped penetrations and folded into tight v panel joints.



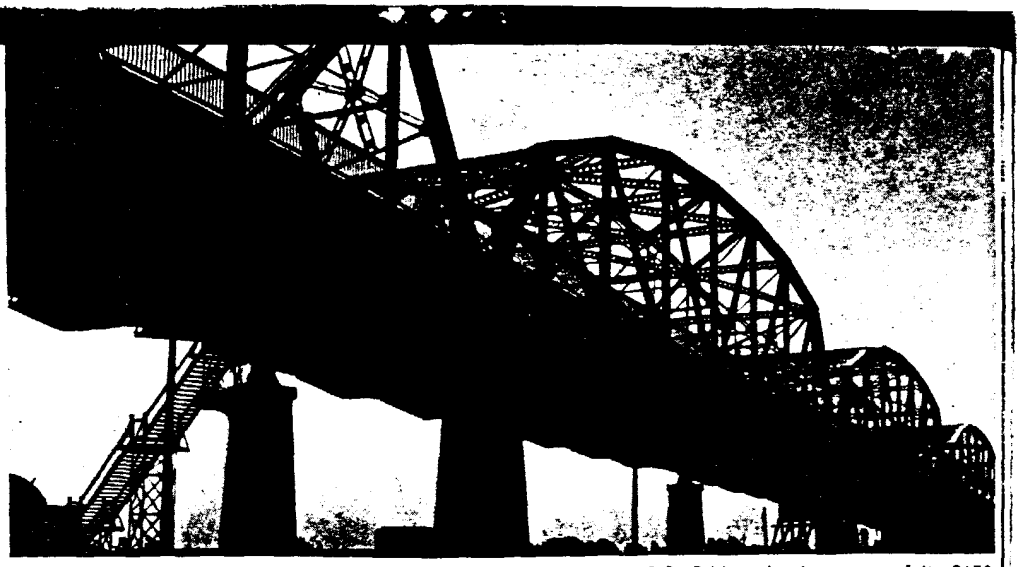
LIA26453



of the cut sheet around these after they had passed through. This latter operation is of particular importance because of the need to eliminate every potential path for sound leakage or "flanking" around the barrier. Ordinary duct sealing tape is adequate for this purpose and easily obtainable.

Some care is essential, of course, to get the best from the sheet lead barrier. But it is easier to do a good job with it than with most competing materials. The big factor in lead's favor is its ease of working. In fact, the Wallboard Construction Company of East Natick, Mass., partition contractors at the bank, were quick to point out that the job was faster and cheaper than if they had used older methods in place of the lead. And the pleasing bonus for contractor and bankers alike is that the performance of the lead, based on previous field tests, will be substantially better than if the other materials had been used.

PLANNING FOR INTERIOR SOUND CONTROL by Sydney G. Rodgers, office planner for the State Street Bank, is a paper presented at the Lead Industries Association annual meeting, March 31, 1966, at St. Louis, Missouri. This informative piece is available to the reader, free of charge



View of the Gibson R.R. Bridge showing some of its 3150 tons of structural steel. Corrosive industrial atmosphere pervades the area, severely testing the best of paint systems.

INDIANA TESTS A NEW LEAD CORROSION FIGHTER

To the maintenance engineer, fighting rust is like running on a treadmill —he has to run hard just to stand still. So naturally,word of a new corrosion inhibitive paint is good news. But how do you tell if a new paint is good? That's another story.

There are salt spray cabinets, fence tests, and numerous "accelerated" tests designed to indicate how well a given paint system might function on the job. When it comes down to the final analysis, however, there is no tougher assignment than maintenance.

And that's just the task assigned to tribasic lead phosphosilicate by Mr. F. S. Hill, Chief, Division of Maintenance, Indiana State Highway Commission. After extensive preliminary testing, the Indiana State Highway Commission let Maintenance Contract M-6694, which covered the painting of the steel truss on State Road #152 over the Gibson Railroad Yards. The contract called for application of two coats—the prime coat being red lead (Indiana S103, Type 2), and the finish coat pigmented with 3.4 pounds per gallon of tribasic lead phosphosilicate (Indiana 64-35).

In July, 1965, Jordan Paint Manufacturing Company, Inc., Forest Park, Illinois, began making the paint, and in August, the contractor, Northwestern Industries, Inc., of Gary, Indiana, began applying it to the Gibson Bridge. In all, about 3,000 gallons were used. Of course, with each passing month further proof and testimony is gained as to the system's corrosion-inhibitive effect, but results on the Gibson Bridge so far have been so promising that the State of Indiana Highway Commission's Division of Maintenance has indicated additional bridges are being considered for testing.

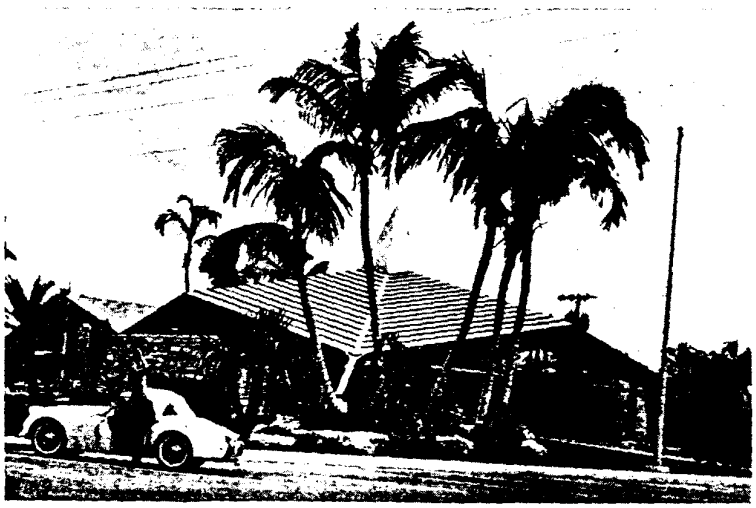
For the typical formulation of a tribasic lead phosphosilicate paint, such as that used by the Division of Maintenance on the Gibson Railroad overpass, see the table below.

INDIANA 63-35, GREEN BRIDGE PAINT

	% Maximum	% Minimum
Pigment *(tribasic lead phosphosilicate, TiO_2, mineral extenders and tinting colors as required.)*	52.0	50.5
Vehicle (raw linseed oil, alkyd resin)	49.5	48.0
Vehicle Non-volatile	64.0	62.5
Non Volatile Paint by Weight	82.5	81.5
" " " " Volume	65.5	64.5
Weight per Gallon	13.125 lb.	12.75 lb.

theoretical coverage per gallon at 3 mils dry film thickness ..... 345 sq. ft.

Three Terne Roofs Welcome the Public



Terne roofs are one of the way skilled designers get "that extr something" in buildings that mus be attractive to the public. Shee terne (steel coated with lead alloy lets architects make the roof ad accents and strong patterns wit such devices as batten seams, deep eaves and steep pitches. Terne is also an excellent base for paint thus giving the architect additional design freedom. Here are three examples of the inviting effects architects are getting with this traditional but lively material.

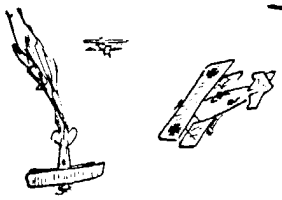
The unusual, multi-triangular roof design of the Youth Club of Cape Coral, Fla. is emphasized by the horizontal lines of Bermuda seams. The 22-ft. high center is topped by a cone shaped translucent skylight rising another 10 ft. Architect is William C. Kreidt.

Interior court of the Snow Flake Motel, St. Joseph, Mich. showing the blue painted saw-tooth roof which encircles the star-shaped motel. The strong lines provide a highly dramatic effect and a constantly changing shadow pattern. Architect is William Wesley Peters.

The San Joaquin Country Club, Fresno, Calif. designed by Walter Wagner & Partners. The pink hexagonal roof and cupola are emphasized and restated by the horizontal seams. The cupola conceals the kitchen range hood, boiler flues and other utility pipes.

Terne metal in all buildings by Follansbee Steel Corporation, Follansbee, West Virginia.

LIA26455



WHOOSH

—and your lawn is cut!

A World War I air ace with a nostalgic turn of mind could close his eyes most any summer suburban Saturday and imagine he was back on the tarmac amid a squadron of Nieuports or Spads warming up for patrol. In fact, the sound of an 18-inch rotary gas mower rounding a tight turn may even bring a picture of an aerial dogfight to *your* mind—whether a Fokker D-7, a P-35, or a Corsair F4U is your idea of a vintage plane. But nostalgia wears thin with three dozen lawns-to-mow within hearing range and roughly six mowers running at any instant.

If for no reason other than noise, people with lawns to mow ought to look at electric mowers. And if they do look, and also consider cost, durability, ease of use, and power, a good many of them still will change to almost silent, battery-powered mowing.

Noise, or the lack of it, is the first thing you notice, of course. The spinning blades are driven by an electric motor and a "whoosh" like that of a powerful fan is all you hear. But start-up is also a revelation—especially if you are accustomed to a balky gasoline mower—because there is no wrestling with starter cranks, chokes, throttles or other dodads. When you want a battery mower to run you switch it on: when you want it to stop you switch it off!

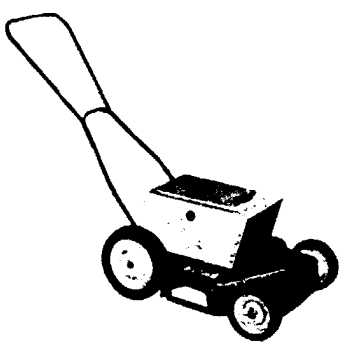
The initial cost of a battery mower is about the same, or a little higher than that of a quality gasoline-powered machine. The real economy of a battery-powered mower is that there is nothing to wear out! Oh, the blades have to be sharpened, of course, and replaced when they are ground down to the nub and the battery has to be replaced with a standard automotive battery every several years, but there are no wearing parts to compare with piston rings, valves, mufflers, plugs, and all the other gas engine parts that go one-by-one after the first season.

In a try-out of one battery unit, it breezed through 8000 square feet of lawn and lot. More than 1000 square feet of it was a weedy patch not touched previously that season. The mower slashed its way through without stalling or running out of pep. The electrical power to recharge the battery was closely checked. It was less than 2¢!

EL-LAWN-TRIC

Electro-Lite Industries Inc.
P. O. Box 7044
Milwaukee, Wisconsin 53213

Simple and smooth operation are key features of the El-Lawn-Tric rotary 18-inch mower. It is, of course, quiet and easy starting as any battery powered mower. The DC motor of this unit is built by the manufacturer for use in mowers. Having been designed for this service it is highly efficient and the special bearings employed are self-lubricated for long life. Recharging is quite simple since the mower has its 3½-amp charger built right in. And the lightweight construction make mowing easy enough for wives and teenagers to handle.



LAMBERT WHIZZ-Pur

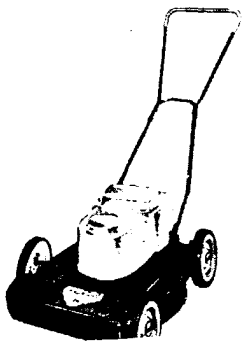
Lambert Incorporated
519 Hunter Avenue
Dayton, Ohio 45404

"Quiet as a whisper" says the manufacturer and claims that the mower cannot be heard 20 feet away. In fact, a safety indicator is included to show when the mower is running. In addition, it features a height adjustment control at the handle and has staggered wheels to minimize any "scalping" on uneven patches of the lawn. Another feature of this 19-inch diameter rotary is that the motor is mounted on nylon bearings so that it "floats" for continuously adjustable height control—even when it is running. The charger and its cord are self-contained for maximum ease in charging.

PINCOR Model P912

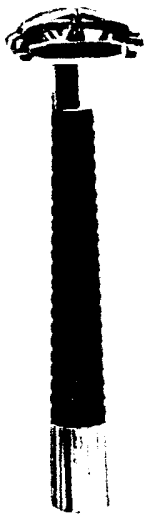
Pioneer Gen-E-Motor Corporation
5841 West Dickens Avenue
Chicago, Illinois 60639

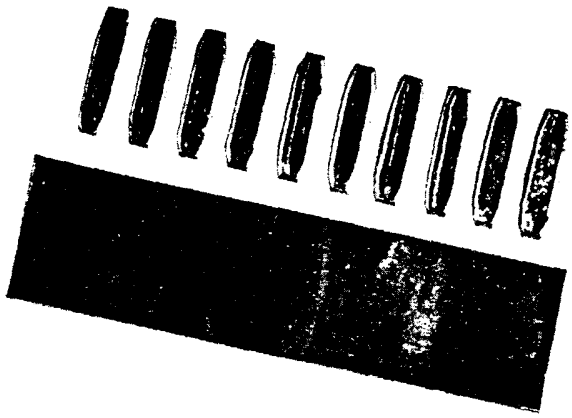
This is a 20-inch diameter rotary whose front discharge chute allows it to work right up to trees, walls, and fences. Safety key starting switch is standard, of course, and the operation is typically quiet. The one-piece alloy steel blade provides a suction lift for making the grass stand up in the cutting process. Instant height control is built-in so that by simply moving the control lever, the blade may be moved anywhere in the 1⅝ to 3 inch height range. The rugged 12-volt battery drives the motor with over 1200 inch ounces of torque. Charger is included.



LIA26456

Automatic Soldering Shaves Costs at Schick





Solder coated brass strip from which end caps are blanked and soldered to the Schick razor shown at left.

Millions of solder joints—reliably and economically. In a nutshell that describes the needs and aim of Thomas Bombero, Chief Design Engineer at Schick Safety Razor Co., when his company planned introduction of a new razor model recently.

In assembling the razor, a cartridge brass end cap was to be joined to each side of a "spider" that supported the blade. The cap served two purposes, esthetic, and as a brace. For joining, solder was required only on the inside. Placement of even a preform would have been difficult—and since it would require hand labor —expensive.

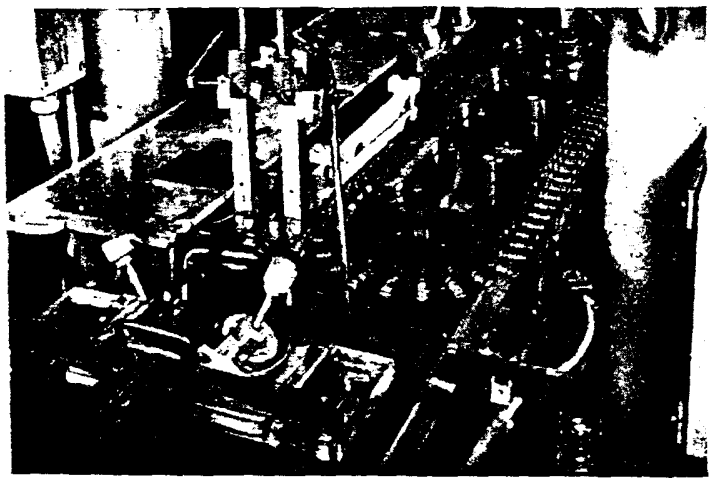
Mr. Bombero's solution to the problem, worked out with the engineering assistance of American Silver Company, was to stamp the end caps from solder-coated strip. Enough solder, 0.004-in. thick, is integrally prebonded to 70/30 brass strip to complete a joint without additional solder.

Of course, a major hurdle still remained before production could commence. Mr. Bombero was unable to locate any machinery on the market that would do the soldering job. Herein lies another success story, for he finally perfected a machine that can out perform even the most ambitious production requirements! At what might be termed cruising speed, the machine turns out finished "spiders" one-per-second.

Deceptively small for the Gargantuan task it performs, the soldering unit measures about 12 feet from the point where the "spider" enters onto a keyed belt that locks it into position, to where a finished unit with two soldered end caps drops down a cooling chute into a metal storage bin.

The reject rate for this stage of the operation is practically nil, and since the machine's operation is exceedingly simple, unit costs are quite small compared to some other method of joining. Of course, a great many hours went into the development and construction of the soldering unit, and as testimony to its completeness, Mr. Bombero points out that a second unit was built shortly after the first with practically no modifications.

"About the only change was to flatten the angle on a wheel which applies flux to the spider ends—but even that change has been questioned", he says. Concerning the use of solder-clad strip for the end caps, Mr. Bombero says, "Use of this material eliminated the guesswork and variables usually associated with making such blind joints and has insured the high quality control standards set by Schick." Miles of this strip, about ½-in. wide, are now furnished to Schick by American Silver Co.

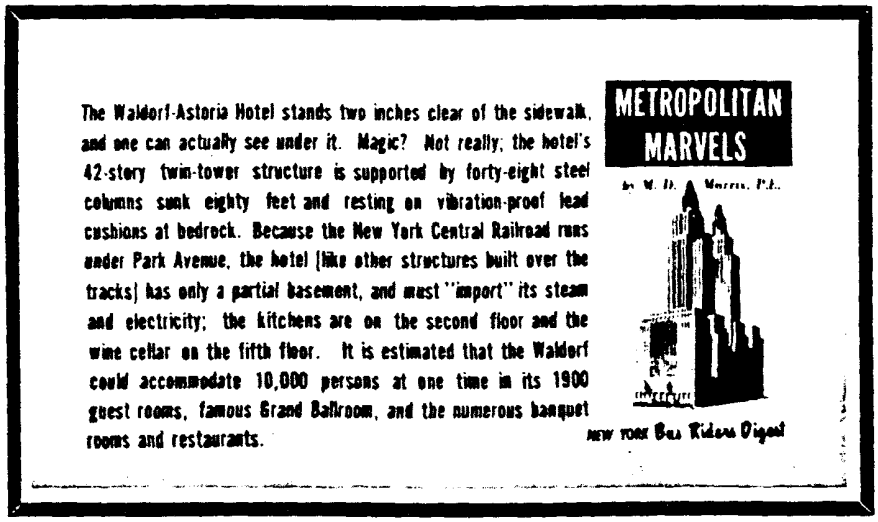


High-speed automatic soldering machine developed at Schick Safety Razor Company. Millions of razors are made each year using two solder-clad end caps of 70/30 brass. In final step, entire metal portion of razor is chrome finished to improve appearance and eliminate corrosion.

Interesting Odds 'N' Ends about Lead

A banquet recently held in London celebrated the 600th anniversary of the founding of the Plumber's Guild. The King's Plumber sat as the respected head of one of the most ancient of the Livery Companies of the City of London. The earliest record of a charter was in 1365 and required that each plumber be a Freeman. Since most Guilds had their origins in religious fraternities, the Plumbers took Saint Michael as their Patron. No weights of lead could be made or sold without being first impressed with the image of Saint Michael.

Great importance was attached to "good and honest work" by the members and Guild Officials were empowered with rights of search to discover and punish any breach of the privileges of the Company. If a plumber were found practicing without proof of at least seven years' apprenticeship he was fined. If a helper arrived on the job without hammer, knife and shave hook he suffered a penalty of four pence subtracted from his wages.

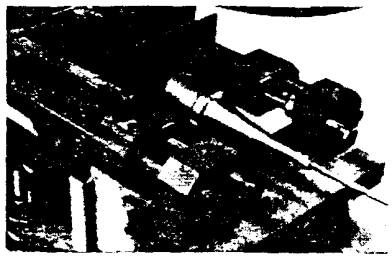


This interesting car card is currently appearing in most of the 4,225 buses of the New York City Transit Authority.

The country's first major suspension bridge was swung over the Ohio River at Cincinnati one hundred years ago. Reference was made in the construction specifications for that bridge to red lead paste mixed with linseed oil to pack the wires that formed the cables.

Over 5000 gallons of the same red lead paste were used to pack the wires of New York City's huge Verrazano-Narrows Bridge, opened in 1964.

Tube drawing's a cinch with ultrasonics. Shown here is a commercially available ultrasonic tube drawing system that uses lead zirconate titanate transducers to activate a back supported plug. The high frequency (over 20,000 cps) vibration reduces frictional forces between work and the plug, plus increasing plasticity of the metal passing through the die. The manufacturer, Aeroprojects Incorporated, West Chester, Pennsylvania, says size control is better, ID surface finish is smoother, and thin wall tubing production is routine with ultrasonic plug drawing.



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 **ADD ME TO YOUR MAILING LIST** (please circle one)

PLEASE CHECK INTEREST

From
Name, title
Company
Street
City, state, zip code

To
Name, title
Company
Street

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

LIA26458

lead

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

LEAD INDUSTRIES ASSOCIATION, 292 MADISON AVENUE, NEW YORK, N. Y. 1

NEW LISTINGS

New developments in soldering equipment and methods
Five new soldering techniques are described and shown. Best features of each are indicated. Four pages.

Classification of inorganic enamels
Two part description of inorganic glass enamels and application techniques. Three tables, six pages.

GENERAL

Lead & zinc supply and demand
Authoritative examination of the short and intermediate supply and demand prospects for lead and zinc. Thirty-five pages.

Annual review—lead 1964

New uses for lead

Design engineering data

BATTERIES

Something new to know about battery power
New developments increase capabilities of battery trucks and truck programs.

Picture book of power batteries

Industrial truck costs in a jiffy

CONSTRUCTION

Lead to control sound and vibration

Isolation of buildings from vibration
Three reprints discuss a number of case histories of the use of lead-asbestos pads to control ground-borne vibration.

Ways to reduce press vibration

Isolating cooling tower vibrations

Practical lead sound barriers
Twelve page manual gives specific wall constructions and performances.

Lead roofing and flashing
Sixteen-page handbook gives all standard lead roofing systems.

High-temperature lead joints

Waterproofing with sheet lead

Pools and planters

Lead work for modern plumbing
$2 per copy; $1.50 for 10 or more.

ENGINEERING

Soldering alloys

Where to use terne coated steel
Four page reprint summarizes new industrial uses for terne, a lead coated steel.

Modern chemical construction

Method of lining lead tanks

Use epoxies to line tanks with lead

Cleaning "hot" parts ultrasonically

Piezoelectric transducers

Importance of lead in glass

New electroceramic data

Lead sheathing for power cable

Materials of construction review

Corrosion data—lead & alloys

Nuclear materials

Radiation protection

Anodes for cathodic protection

FINISHES

Follow the safety line with chrome yellow
Formulations and suggested applicatio for chrome yellow safety paints. Eig pages.

Lead paint systems for bridges
Two reprints

Decorative finishes for lead

Red lead based paint systems

Porcelain enamels:
For aluminum
Low temperature steel
Molybdate opacified enamel

Glazes for brick

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.

287

Reproduced by letterpress from lead type.

PRINTED IN U.S.A.
GUIDE-KALKHOFF-BURR, INC
NEW YORK, N. Y.

Mail to: Lead Industries Assn., Inc., 292 Madison Ave., New York, N.Y. 10017

Name, Title

Company

Street

City, State, Zip Code

Please send

LIA 26459

TO

REQUEST

LITERATURE