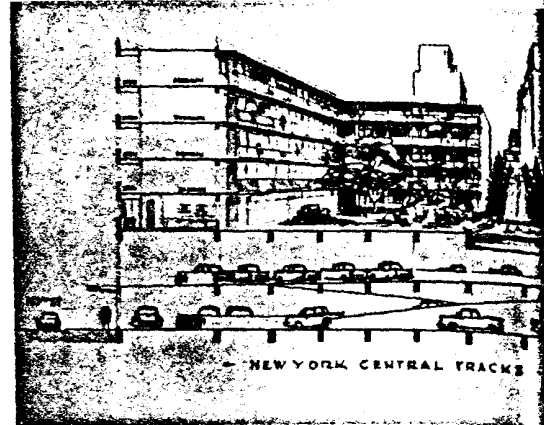




lead

LEAD INDUSTRIES ASSOCIATION, INC.

Cutaway sketch shows two levels of garages and rail-road tracks directly under the rooms and recreational facilities at the new Motel City. Lead-asbestos pads in the foundation will keep out objectionable vibration and rumble.



Lead pads

block out city's roar

MANHATTAN'S COUNTRY

The classic complaint of the city dweller on his first visit to the country is that the crickets keep him awake at night. If there were any crickets at Tenth Avenue and 42nd Street in midtown Manhattan these nights, they'd be keeping *country* visitors awake!

Despite heavy rail and street traffic at the site, no city noises are allowed to penetrate Motel City, a pleasantly rural hotel now nearing completion there. The location is probably one of the most difficult in New York City from the standpoint of noise and ground-borne vibration. But architects Wechsler & Schimenti and the owner,

Joseph Budish, have spared no effort in achieving the serene atmosphere they have in mind.

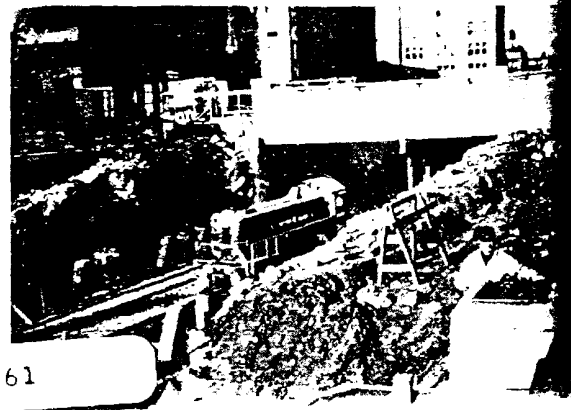
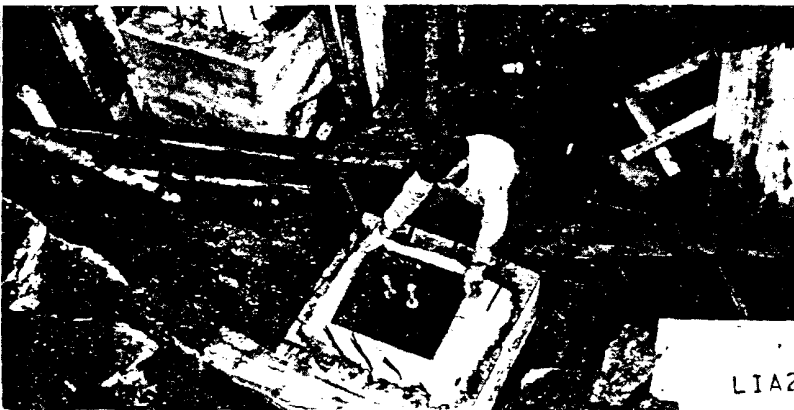
For one thing, the plot abuts the highway complex leading to and from adjacent Lincoln Tunnel. The doubtful progress of the 24-hour-a-day traffic jam there makes a spectacular scene but generates very un-rural noise. To make matters more difficult, the site is directly over the New York Central freight tracks. While train traffic is not so continuous as that of the trucks and cars, passing trains not only make noise, they shake the very bedrock on which the building rests.

To block this noise and vibration, the architects and engineers (C. B. & Rongved) have turned to lead-asbestos anti-vibration pads under columns supporting three multiple buildings. The first of these, now complete and operating, provides 92 rooms on two floors and one floor of recreation space. The additional buildings, when complete, will have 374 rooms, a swimming pool, an ice-skating rink, and decorative fountains and pools.

This will require 180 additional footings with lead-asbestos pads. The pads will be supplied by the

One of the small pads being emplaced in grout. The tie bolts will be loosened when the loaded column is complete so that no vibration "short circuits" the pad.

A New York Central diesel switch engine chugs past. The building will be directly over these tracks. Note the concrete column support which will receive the columns adjacent to the track.



LIA26261



The Battle of Hastings, authentic in details so far as historic research can reveal, was modeled for the New Jersey Museum by Greer.

There's something about a soldier

There are two approaches to playing with lead soldiers and most of us gave up after exploring the first one. This was the childhood pastime of maneuvers on the living room rug to the accompaniment of "BANG, BANG — no fair, I got you!"

The second approach appears to be considerably more rewarding, but it demands skill and patience and an interest deep enough to lead to serious historical research. This, of course, is the avocation of making scale replicas of famous soldiers of the past.

In making such a figure, the work starts long before the model maker melts his lead. First he must learn the physical characteristics of the soldier he'll depict. He checks into social customs, fighting methods, standard equipment, and the uniform and colors of the regiment.

When the data is complete, eight to ten hours of skilled work are needed to build the figure. There is no standard method in doing this — the degree of complexity and the peculiar details required determine the technique. Master Sergeant William E. Greer, who made the miniatures pictured here, often starts by cutting a cruciform blank from sheet lead. This is bent and built up with solder or metal-filled plastic as needed. Careful filing and shaving bring the model to the final dimensions.

Of course, the details of dress and equipment are just about impossible to sculpt in this way. Belts, buckles, blanket rolls, cap ornaments, helmets, heraldic devices, flags, gun barrels, cloaks, capes, and sashes are cut from thin sheet (lead toothpaste tubes are a favorite source) and cemented to the

figure before it is painted. Sergeant Greer's collection of tools for this task is just as specialized as any plumber's or sheet metal shop's: dental probes, eyebrow tweezers, sewing machine needles and mimeograph stencil styli. Among his heavy equipment is a light soldering iron and a bean can he uses for a melting pot.

Makers of miniatures prefer to use lead because its malleability allows them to drape a cloak or bend a figure to take a position which fits the action. They like lead's durability and the fact that it can be melted and remelted, as Sergeant Greer puts it, "with a minimum of fuss and equipment — in the kitchen or home workshop."

Though he often works "from scratch," Sergeant Greer's modeling of this Royal North British Fusilier (21st Foot, ca. 1815) started with a stock cast lead figure. The left arm and rifle were cut free of the body and an authentic weapon was cast and joined, with the arm, in a new position. Note the cross belts, blanket roll and other accoutrements which have been added.



SPA

Abernethy Company of Brooklyn, New York. In most cases the pads will measure 24" x 24" and will be loaded to 600 psi. Under the pads, concrete piers will run down to bedrock. In some cases these piers are directly on the railroad right-of-way and only clear passing trains by 4'.

Amazingly Quiet

Experience with the pads has shown, however, that isolation from the train vibration will be excellent. According to Mr. Budish, "Most of the sound which reaches a building interior comes from ground-borne vibration. Our building floats on a lead-and-asbestos foundation and it is amazingly quiet."

Of course, quiet is only one of the delights of country living and the creation of this new facility have not been hampered with these measures in achieving their goal. By means of well ordered architecture enhanced by adroit landscaping elements, they have avoided the ultra-sophisticated and gaudy and attained instead a homely and agreeable atmosphere. Modernity is hardly rustic but it has the peace and tranquility of the country.

Workmen lower ball into bell socket on 24-inch Johns Pass installation. Since retainer ring comes assembled on barrel, the gasket and lead lock are the only loose accessories. As each joint is made, barge moves ahead allowing pipe to slide down the chute.



A FLEXIBLE PIPELINE OF

When a pipeline crosses a lake or stream, there are two traditional solutions to the problem of rigid pipe versus the irregular bottom contour: suspend the pipe above the water or carefully excavate a straight level trench underwater. Both are touchy undertakings. Both are costly. And any skimping with either procedure is likely to result in a costly leak.

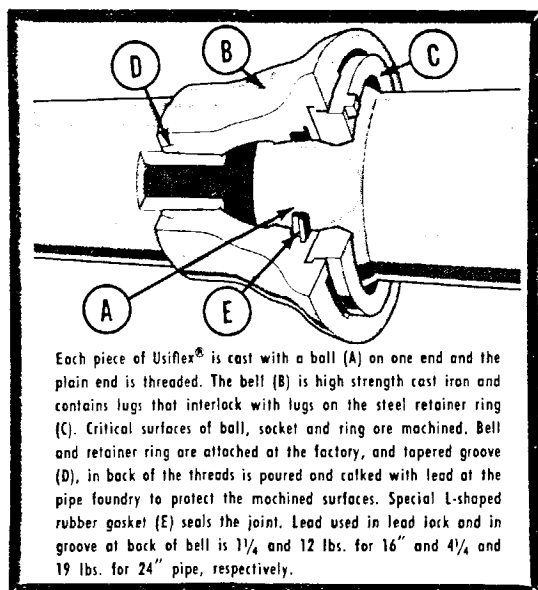
Happily, there is a way to make cast iron piping flexible enough to fit such contours. Last year United States

Pipe & Foundry Company introduced Usiflex® boltless flexible joint pipe. This type of pipe is unique because it can be assembled without the use of bolts, nuts and wrenches, and is positively locked against pull-out.

The joint is of the push-on type where the water tight seal is made by compression of a gasket between the spherical ball and corresponding spherical surface in the bell. The joint can be deflected as much as 15° and still remain bottle-tight.

Several recent installations point out the advantage of this novel pipe. The Long Island Water Corp. has installed pipe water service across the Page Canal near South Baldwin, for example, the job was done at reduced cost with 16" Usiflex boltless flexible joint pipe. Cranes equipped with clamshell buckets on either side of the canal opened a 200 foot trench extending into the bank on both sides. Support piles, sheathing and timber were emplaced, and the pipeline

Lining up ball and socket over Parsonage Canal. Note the retainer ring just to right of



ST IRON

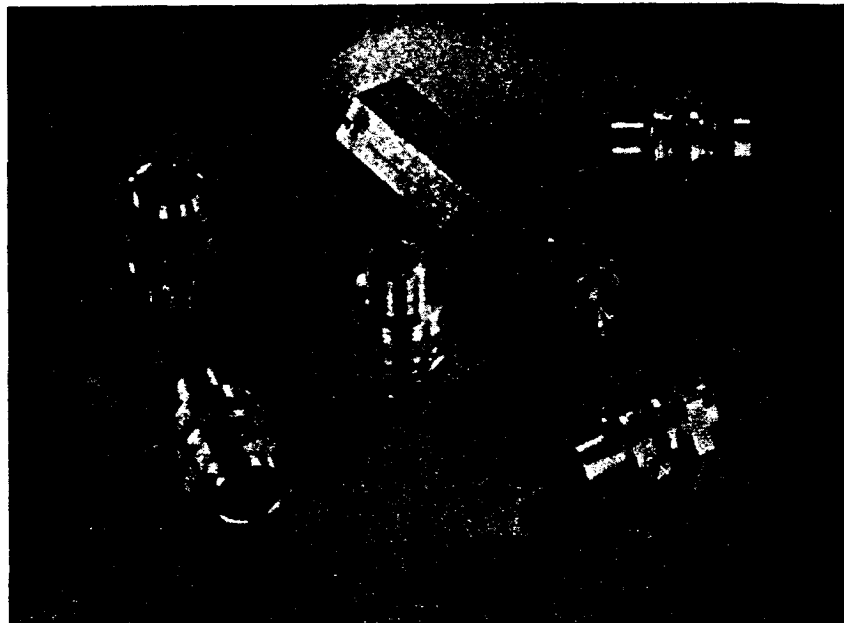
After removing the shop-applied protective coating from all machined surfaces with a solvent, workmen made each joint ready with a gasket placed in the seat in the bell. As soon as this was done, both the gasket and mating flange were lubricated.

Once seated, the ball was locked in place with a steel retainer ring. The final step was calking a lead lock into the recess between retainer ring and ball.

Water tight, though still movable at each joint, the assembled pipe was lowered, positioned, and checked for leaks under pressure. After backfilling, the pipe was soon in service.

Two other installations — in Pinelake County, Florida — demonstrated the time saving possible with this pipe. In one, 1900 feet of sixteen-inch pipe were laid across Pass-A-Grille channel. In the other — 1450 feet of 24-inch pipe made the underwater link across Pass.

Even on runs like this, only two barges were necessary. One excavated with a clamshell bucket, while the other barge was equipped with a chute through which the pipe was assembled and progressively lowered to the bottom from one shore to the other. Several pipe assemblies were spot timed at 15 minutes to completion, and progress depended mainly on the speed of the digging barge.



Lead and Tellurium... Boost Machining Speeds

Lead and tellurium are making news again! In recent months, lead telluride has been spotlighted as its thermo-electric properties have become better known.

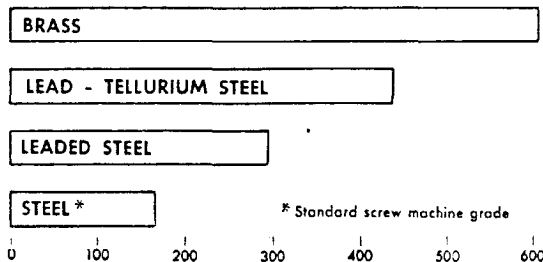
Now the spotlight has shifted to a new use for the two metals — a fast-cutting leaded steel containing small amounts of tellurium. Recent tests by the La Salle Steel Company of Hammond, Indiana, a leader in the development of free-machining leaded steels, have proved that the addition of tellurium to leaded steels increases their machinability even further.

Using hexagonal 13/16-in. stock

(photo) and first class machinery, cutting rates for La-Led X® 35 to 40 per cent higher than regular leaded steels and 3½ times the rate of ordinary steels were easily achieved.

Though its price is slightly higher than regular leaded steel, its greater machining speed could easily offset this factor, since in this type of operation millions of pieces are produced each year and the cost is figured on a unit basis. Thus if a second were saved on each part, two working days of machine time, labor and overhead could be saved for every 60,000 parts produced.

NORMAL SHOP PRODUCTION SPEEDS
surface feet per minute



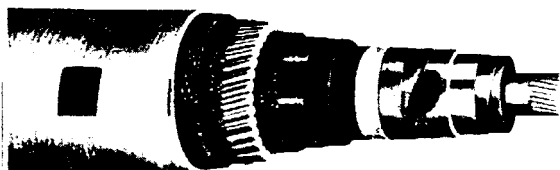
* Standard screw machine grade

Note that the new steel approaches brass in machinability.

40 year dream realized

Lead Power Cable Links England, France

A stripped back section of the cable shows the 0.525 sq. in. copper conductor, electrostatic tapes, solid impregnated paper insulation, a second electrostatic tape, the lead sheath, anti-twist tapes and rubber water-proofing, the armor wire layer and its bedding and serving.



THOUGH it is a sound idea, the first proposal of a power cable linking England and France was probably greeted as far-fetched and visionary. Forty years of engineering progress have changed the picture — the cable link was completed this winter.

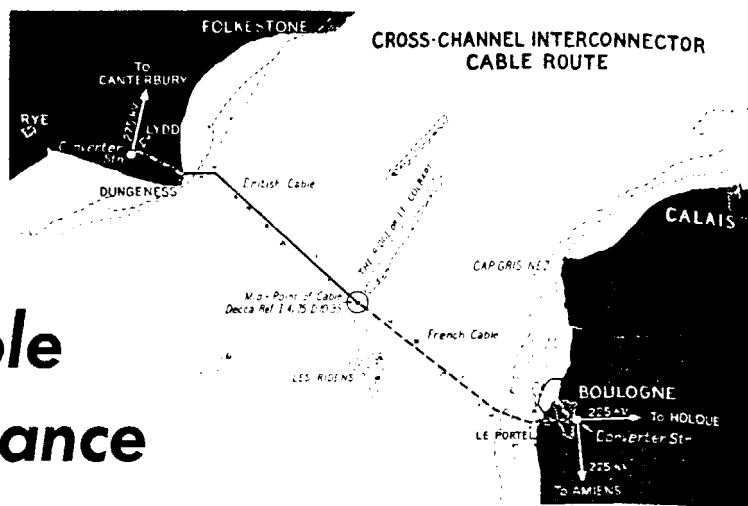
More than 70 miles of cable have been laid across the channel, joined, and connected to the power networks of the two countries. Since peak demands in England and France occur at widely differing times, each can act as

a power reserve for the other. The cable makes it possible to transfer 160,000,000 watts of power in either direction.

Though each of the two countries uses a 50 cycle alternating current standard, the transfer link is a direct current loop. There are two reasons for this. In the first place DC makes it unnecessary to phase the two systems exactly. Severe overloads would result from improper phasing or synchronization. In the second, DC makes the maximum use of the insulation value of the cable. For the same electrical stress as the 100 kv employed in DC transmission, AC transmission would have been restricted to 70 kv.

Based on this design concept, the completed link uses two single-conductor cables sheathed in lead and armored with galvanized steel wire. One of these is operated 100,000 volts positive with respect to ground; the other 100,000 volts negative with respect to ground. Because of the excellent cool-

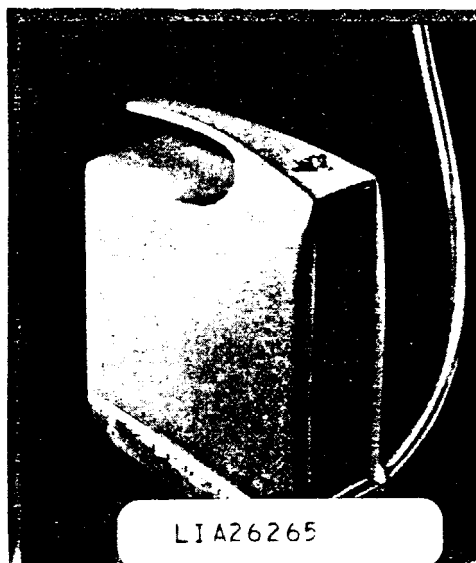
CROSS-CHANNEL INTERCONNECTOR CABLE ROUTE



ing effected by the surrounding seawater, 200 amperes may be carried without heating.

Precise engineering details of the cable have not yet been released by Britain's Central Electricity Generating Board, but it is estimated by reliable sources to have an overall diameter of 31 1/4 inches with the lead sheath being 13 1/4 inches OD and 0.1 inch thick. The cables weigh nearly four tons per 1000 yards. Details of the French half of the link were not available.

The advantages of lead sheathing for this sort of cable service are well known. Lead maintains watertight integrity which, in turn, permits the use of paper insulation. This is highly preferable — one might even say necessary — for reliable service in the voltage range required. While other metallic sheaths might also provide watertightness, none of them has lead's flexibility or immunity from corrosion in service.



Battery Power Mans the Pump

Boat owners, campers and all others who need running water in unlikely places (including flooded basements) now have a pump of unrivalled convenience. Powered by two 2-volt lead-acid cells, it moves three gallons of water a minute and will run seven hours without recharging (by plugging into a standard 110 volt outlet). Life expectancy for the batteries is four years. This is one of a series of battery-powered products planned by Russell Harrington Company of Southbridge, Mass.

NEW USES AHEAD FOR PZT

Last issue, LEAD looked into ignition systems for furnaces, speedometers, and scales soon to be making use of the piezoelectric magic of lead zirconate titanate. This issue describes electrostatic filtering for home air conditioners and the possibility of a "picture frame" TV tube.

The unique performance of PZT as a producer of high voltage whenever it is mechanically stressed has already won it a host of interesting jobs. Among those now under serious study or about to be produced commercially are high voltage generators for air conditioners, room air purifiers and range hoods. Electrostatic air filtering on these appliances is known to be the best approach — but conventional means of generating the voltage is just too expensive to be considered for wide-spread use.

A transformer, capacitors and a rectifier are required to keep a high static charge of electricity on the air filtering screen. All this equipment adds dollars to the cost.

Inventor Jerome Murray's system is simple and costs less than \$2. Pressure from a cam on a piece of PZT no bigger than the tip of your little finger is all that is needed to supply 6000 volts at 1 milliampere. (His arrangement, in fact, can supply 21,000 volts.) The electrostatic filter so produced is about 90 per cent efficient compared with about a 20 per cent efficiency for the mechanical filtering system it replaces.

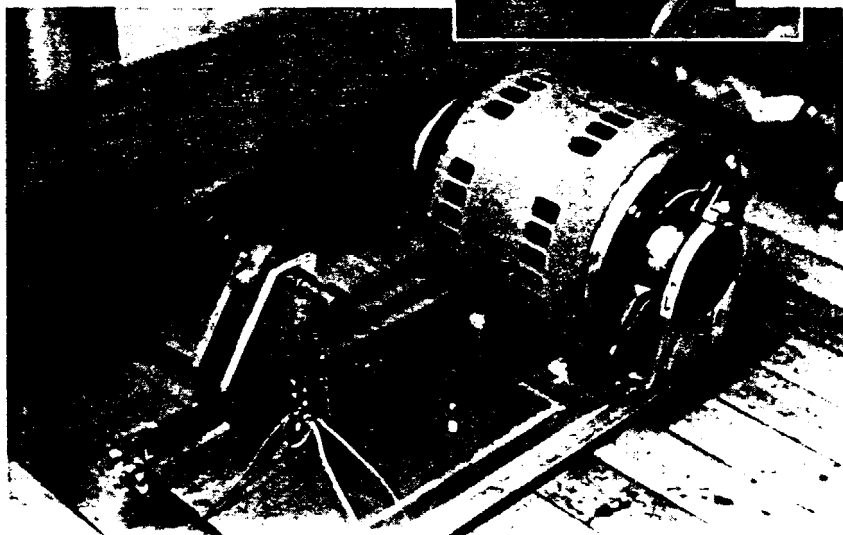
The photos of the unit were taken at the labs of The Jerome L. Murray Corp., 401 East 58th Street, New York 22, N. Y.

A flat TV set that will hang on the wall like a painting may be a reality one day. Recent experiments at General Telephone and Electronics Labs in Bayside, N. Y. make this seemingly unlikely gadget a distinct possibility.

Researchers there have developed a flat panel of PZT sheet stock coated with an electro-luminescent phosphor that will create a simple image. As in a conventional TV tube, the image is

produced by modulating a "spot" of light that traverses the panel. Acoustical waves interacting with the electro-luminescent phosphors produce the "spot". Position is controlled by timing the acoustical waves and the spot is modulated by an electric field applied to a conductive layer over the phosphors. Some problems still exist but the feasibility of an image on a flat panel has been demonstrated.

6000 volts from a minimum of hardware. This basic setup will be used in room air conditioners. The voltage shown arcing in this demonstrator (lower left) is produced when cams on the existing fanshaft nudge small blocks of PZT. Separate sources of 6000, 4000, and 2000 volts will supply three filter screen electrodes to knock out virtually all air-borne dust and pollen. Inset shows size of the PZT unit.



TV "tube" of the future is not a tube at all but a sheet made up of layers of transparent conductor, electroluminescent material, non-linear resistance and lead zirconate titanate. Simple images like the circle shown have demonstrated the potential of the "tube" to produce pictures.



CHURCH MURAL PAINTING

— with a difference

Artists Thelma Frazier Winter and Edward Winter are modern day practitioners of the centuries old art of mural painting for buildings and churches. There's a difference though. The Winters paint on metal with porcelain enamels. Porcelain enamel murals such as the one shown here for St. Mary's Romanian Orthodox Church in Lakewood, Ohio have nothing to fear from the weather.

Application of the various colors in this mural required more than ten firings. Shades of royal and light blue in Christ's robe were obtained by using transparent lead enamels fired over a white enamel surface.



lead



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