

Note: This program is
subject to change

PRELIMINARY PROGRAMS

LEAD INDUSTRIES ASSOCIATION, INC.
39th Annual Meeting
and
AMERICAN ZINC INSTITUTE, INC.
49th Annual Meeting

The Drake Hotel Chicago, Illinois
Monday-Tuesday-Wednesday, April 17-18-19, 1967

LEAD INDUSTRIES ASSOCIATION, INC.

Monday, April 17, 1967

8:30 A.M.
Registration French Room Foyer

MORNING SESSION -- SEMINAR ON INDUSTRIAL BATTERIES

9:30 A.M. Walton Room

WARREN T. TRASK, Presiding
Vice President and Manager, Metal Div., National Lead Co.
Vice President, Lead Industries Association, Inc.

OPENING REMARKS

THE LEAD ACID BATTERY -- DON'T SELL IT SHORT GEORGE P. KILLINGTON, JR.
Vice President & General Manager
Gould-National Batteries, Inc.

REPORT ON GOVERNMENT BATTERY RESEARCH BRUCE FADER
Manager of Technical Services
Lead Industries Association, Inc.

FEASIBILITY OF SMALL BATTERY POWERED VEHICLES MAX L. VILLMAN
Tempo-Center for Advanced Studies
General Electric Co.

A CONCEPT OF PUBLIC TRANSIT W. W. OWEN
Executive Vice President
Dayton City Transit Co.

LET'S GET THE LEAD OUT -- IN FRONT WILLIAM E. STURN
Vice President, General Services
West Penn Power Co.

ANNOUNCEMENTS

12:00 Noon
REFRESHMENTS & LUNCHEON French Room

LEAD INDUSTRIES ASSOCIATION, INC.

Monday, April 17, 1967

AFTERNOON SESSION

1:45 P.M. Walton Room

R. JAMES HOPKINS, Presiding
 Director of Overseas Market Development
 The Broken Hill Associated Smelters Proprietary, Ltd.
 Member, LIA Board of Directors

OPENING REMARKS:

JOHN R. ENGLEHORN
 Vice President, St. Joseph Lead Co.
 President & Chairman of the Board, Lead Industries Association, Inc.

NOMINATION OF LIA DIRECTORS JEAN VUILLEQUEZ
Chairman, Nominating Committee for Directors
 President, Ametalco, Inc.

ELECTION OF LIA DIRECTORS

LIA TREASURER'S REPORT DAVID M. BORCINA
 Secretary-Treasurer
 Lead Industries Association, Inc.

CANADIAN DEVELOPMENTS IN LEAD (Tentative Title) H. M. LEWIS
 Manager, Metal Sales
 Cominco Ltd.

LIA STAFF REPORT JOHN L. KIDDERLEY
 Executive Vice President
 Lead Industries Association, Inc.
 and
 LIA STAFF MEMBERS

HEALTH AND SAFETY REPORT DON G. FOWLER
 Director, Health & Safety
 Lead Industries Association, Inc.

ANNOUNCEMENTS

LIA BOARD OF DIRECTORS MEETING

4:30 P.M. Parlor H

LIA RECEPTION

6:00 P.M.
 REFRESHMENTS & BUFFET Venetian Room

LEAD INDUSTRIES ASSOCIATION, INC.
AMERICAN ZINC INSTITUTE, INC.

Tuesday, April 18, 1967

8:30 A.M.
Registration French Room Foyer

JOINT SESSION

9:30 A.M. Grand Ballroom

ANDREW FLETCHER, Presiding
Board Chairman, St. Joseph Lead Co.
Member, AZI Board of Directors

OPENING STATEMENT

ANNOUNCEMENT OF ELECTION OF LIA OFFICERS

LEAD AND ZINC IN DEVELOPING COUNTRIES R. LEWIS STUBBS
Director-General
Lead and Zinc Development Associations

PROBLEMS OF EUROPEAN LEAD AND ZINC SUPPLY CLEMENS SCHÜLLER
Fachvereinigung Metallhütten
und Umwandlungswerke E.V.

AIR AND WATER POLLUTION (Tentative Title) VERNON G. MACKENZIE
Deputy Director
Bureau of Disease Prevention and Environmental Control
U.S. Public Health Service

GENERAL STATE OF U.S. ECONOMY (Tentative Title) WILLIAM F. BUTLER
Vice President & Director, Economic Research
The Chase Manhattan Bank

NOMINATION OF AZI DIRECTORS FRED R. JEFFREY
Chairman, Nominating Committee for Directors
President, National Zinc Co.

CLOSING REMARKS LIA President-elect

ANNOUNCEMENTS

12:00 Noon REFRESHMENTS (AZI-LIA-OC) French Room & Gold Coast Room

12:30 P.M. LUNCHEON (AZI-LIA-OC) Gold Coast Room

Page -4-

AMERICAN ZINC INSTITUTE, INC.
LEAD INDUSTRIES ASSOCIATION, INC.

Tuesday, April 18, 1967

1:45 P.M. Grand Ballroom

A. E. LEE, JR., Presiding
Vice President, American Metal Climax, Inc.
Member, AZI Board of Directors

AZI/LIA JOINT SESSION -- Continued

LEAD AND ZINC -- METALS WITH A BRIGHT FUTURE S. F. RADTKE
Executive Vice President & Director of Research
International Lead Zinc Research Organization, Inc.

AMERICAN ZINC INSTITUTE SESSION

ELECTION OF AZI DIRECTORS J. R. ALEXANDER
Vice President, The New Jersey Zinc Co.
Vice President, American Zinc Institute, Inc.

AZI TREASURER'S REPORT J. R. ALEXANDER
Treasurer
American Zinc Institute, Inc.

COMPETITIVE FACTORS AFFECTING ZINC DIE CASTING DAVID LAINE
Secretary
American Die Casting Institute

AZI STAFF REPORT JOHN L. KIMBERLEY
Executive Vice President
American Zinc Institute, Inc.

ANNOUNCEMENTS

AZI BOARD OF DIRECTORS MEETING

4:15 P.M. Venetian Room

6:30 P.M. REFRESHMENTS (AZI-OC) French Room & Gold Coast Room

7:30 P.M. DINNER (AZI-OC) Gold Coast Room

Page -5-

AMERICAN ZINC INSTITUTE, INC.
THE GALVANIZERS COMMITTEE

Wednesday, April 19, 1967

8:30 A.M.
Registration French Room Foyer

JOINT SESSION

9:30 A.M. Grand Ballroom

J. R. ALEXANDER, Presiding
Vice President, The New Jersey Zinc Co.

ANNOUNCEMENT OF ELECTION OF AZI OFFICERS

ZINC IN 1966 CARS EILAR IVERSON
Manager
American Zinc Institute, Inc.

GALVANIZED STEEL -- THE BOLLE-BOYCE STORY S. A. HISCOCK
Zinc Development Association

U.S. CARS AND THE "SAFETY PROGRAM" (Tentative Title) A. J. OOMAS
Assistant Chief Engineer
Ternstedt Div., General Motors Corp.

ZINC -- THE METAL FOR MEN DR. WILLIAM H. STRAIN
University of Rochester
School of Medicine and Dentistry
and Strong Memorial Hospital

CLOSING REMARKS AZI President-elect

ANNOUNCEMENTS

12:00 Noon REFRESHMENTS (AZI-OC) Gold Coast Room

12:30 P.M. LUNCHEON (AZI-OC) Gold Coast Room

L.I.A. Annual Meeting

April 17-18, 1967

REPORTS OF THE STAFF

5. - John N. McAvard
Advertising Manager

SPACE ADVERTISING

Our advertisements during 1966 were inserted in a total number of twenty trade and business magazines. The combined circulation of all these publications is approximately 1,500,000.

The publications in which we advertised are as follows:

	<u>Subject</u>
American Ceramic Society Bulletin	Ceramics
American City	Paints - Red Lead & Chrome Yellow
Architectural & Engineering News	Pools, Roofing, Sound
Business Week	Batteries, Pools, Roofing, Sound
Ceramic Age	Ceramics
Ceramic Industry	Ceramics
Electrical World	Cable
Engineering News Record	Pools, Roofing, Sound, Paints
Factory	Batteries, Cable, Sound
Glass Industry	Ceramics
Machine Design	Solder, Terme, Design Applications
Material Handling Engineering	Batteries
Materials in Design Engineering	Solder, Terme, Design Applications
Metal Products Manufacturing	Solder, Terme
Modern Materials Handling	Batteries
Product Design & Development	Solder
Product Engineering	Solder, Terme, Design Applications
Progressive Architecture	Pools, Roofing, Porcelain Enamels, Sound
Roofing-Siding-Insulation	Roofing
Rural & Urban Roads	Paints - Red Lead & Chrome Yellow

All of our advertisements are reproduced in a smaller scale later on in this report.

TRADE SHOWS

The Association exhibited at the following national trade shows:

American Institute of Architects: attended by approximately 2,600 architects and architectural firm employees.

Construction Specifications Institute: attended by 1,600 C.S.I. members (the majority of whom are registered architects). These are individuals engaged in the specifying of building products.

Presented at the 39th Annual Meeting of the Lead Industries Association
Chicago, Illinois, April 17, 1967

- 2 -

Design Engineering Show: attended by approximately 20,000 design engineers and materials engineers.

Industrial Building Section - Plant Engineering Show: attended by individuals engaged in plant management and plant construction. Attendance at this show was about 18,000.

National Plumbing-Heating-Cooling Exposition: attended by 2,500 plumbers, plumbing contractors, and individuals in the heating and cooling industry.

We feel that trade shows are a necessary part of our total communications program. They give us an opportunity to discuss first-hand the problems facing individuals currently involved in working with lead or lead products.

A testimony to this is that during the five trade shows about 1,000 people asked to be put on our mailing list for additional information.

Another important part of this communications program is LEAD magazine. LEAD, one of our most effective direct mail activities, is issued quarterly and has a total print order of 79,000 copies.

64,000 are mailed by us
2,000 are shipped to LDA in London
1,500 go to ALDA in Australia
and 8,200 go to Cominco in Canada

These copies, of course, are paid for by the various Associations and distributed by them in their respective countries.

The 64,000 copies that are distributed by L.I.A. go to a variety of individuals which include almost 18,000 architects, over 18,000 design engineers, 7,000 ceramic engineers, and 3,500 chemical and nuclear engineers.

The lists also include plumbers, highway officials, health and safety officials, painters and paint manufacturers and a variety of miscellaneous lists.

As a result of these activities almost 14,000 inquiries were generated.

These include 11,000 from magazines, press releases and trade shows (simply for literature), and over 2,700 direct technical questions asked either by phone, letter or personal visit.

Inquiries

	<u>General</u>	<u>Technical</u>	<u>Total</u>
Magazines Space Advertising	4,269	174	4,443
Press Releases	1,905		1,905
Other Sources	4,803	2,546	7,349
Total	10,977	2,720	13,697

- 3 -

MOVIE DISTRIBUTION

Following is a brief summary of the distribution for 1966 for our new film in four major audience areas for sponsored films: Professional, Television, Adult Groups, and High Schools.

Professional Audiences

National distribution to the following audiences:

Engineering colleges of all categories
 Teachers colleges
 Architects
 Design engineers
 Metallurgical engineers
 Chemical engineers and chemists
 Corrosion engineers
 Electrical engineers (I.E.E.E.)
 Mechanical engineers
 Electrical power utilities industry

Adult Groups and High Schools

There are numerous organized adult audiences throughout the country such as business and industry, civic and community groups, fraternal orders, churches, etc., which make a practice of screening films at their regular meetings. The Lead Matrix is being offered to many of these audiences.

In addition to these adult groups the film will be offered to various high schools around the country.

Television

Our movie was distributed on local television stations across the country.

Now, during the fiscal year from February, 1966, through February, 1967, our movie, "The Lead Matrix," has enjoyed the following distribution:

General distribution including professional and engineering societiesReported Showings

1,688

*Computed Showings

2,567

Reported Audience

111,255

Computed Audience

168,140

* Computed data indicates the approximate number of showings and the audience which would be reported if all audience response cards had been returned.

No. of Telecasts

107

Television BookingsAudience

2,492,459

- 4 -

The Australian Lead Development Association ordered 10 prints for their own use and Cominco ordered 2 prints for their use.

In addition, the movie has been nominated for showing in the Blue Ribbon Award competition of the 1967 American Film Festival. A special Festival Honor Certificate has been awarded to us, and we stand a good chance of winning the Blue Ribbon Award.

LITERATURE DISTRIBUTION

The following literature was distributed during 1966:

<u>Subject</u>	<u>No. of Copies</u>
Alloys & Coatings	30
Anti-Vibration	4,513
Batteries	25,188
Bearings	61
Cable	554
Ceramics	3,013
Corrosion	6,420
Paint	7,321
Plumbing	2,442
Radiation	1,372
Roofing, Flashing & Waterproofing	10,463
Soldering	3,367
Sound Attenuation	12,334
Miscellaneous	<u>7,229</u>
Total	84,307

NEW PUBLICATIONS

The following new publications were issued during 1966 and distributed to the appropriate groups.

<u>Subject</u>	<u>Quantity</u>
Lead (4 issues)	280,000
Lead Abstracts (12 issues)	22,000
Architectural Applications of Lead for Noise Control	18,000
Working With Lead and Adhesives	<u>5,000</u>
Total	325,000

REPRINTS

Following are articles pertaining to lead products and uses, which were reprinted and distributed by the Association.

- 5 -

<u>Subject</u>	<u>Quantity</u>
New Developments in Soldering	
Equipment and Methods	20,000
Classification of Inorganic Enamels	10,000
Roofing With Seamless Terne	1,000
Navy Gives A Well Done To Solid	
State Controls	<u>2,000</u>
Total	33,000

BATTERY CAMPAIGN-1966



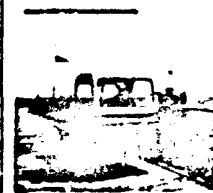
**The F-1 Automaker Rides to Efficiency
with Battery-Powered Trucks**

The F-1 Automaker Rides to Efficiency with Battery-Powered Trucks. The F-1 Automaker Rides to Efficiency with Battery-Powered Trucks. The F-1 Automaker Rides to Efficiency with Battery-Powered Trucks.



**New "No Hands" Driving
Lowers In-Plant Handling Costs**

New "No Hands" Driving Lowers In-Plant Handling Costs. New "No Hands" Driving Lowers In-Plant Handling Costs. New "No Hands" Driving Lowers In-Plant Handling Costs.



**7 Miles a Day, Electric "Tanks"
Bring More Work Per Man-Hour**

7 Miles a Day, Electric "Tanks" Bring More Work Per Man-Hour. 7 Miles a Day, Electric "Tanks" Bring More Work Per Man-Hour. 7 Miles a Day, Electric "Tanks" Bring More Work Per Man-Hour.



**Electric trucks
save 14¢ per mile
on milk route**



Electric trucks save 14¢ per mile on milk route. Electric trucks save 14¢ per mile on milk route. Electric trucks save 14¢ per mile on milk route.



**How They Keep Conveying Payloads
at CARTER CARBURETOR**

How They Keep Conveying Payloads at CARTER CARBURETOR. How They Keep Conveying Payloads at CARTER CARBURETOR. How They Keep Conveying Payloads at CARTER CARBURETOR.



How to Pay Cost-Cutting

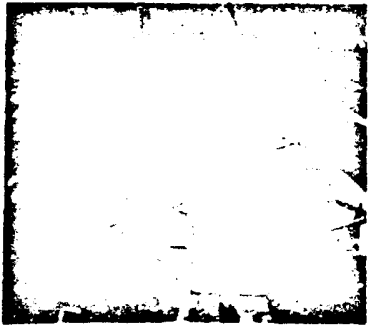
**GO ELECTRIC FOR
IN-PLANT TRUCKS**

How to Pay Cost-Cutting. How to Pay Cost-Cutting. How to Pay Cost-Cutting.



These six 1/4 page advertisements have appeared in *Business Week* magazine, *Material Handling Engineering* magazine, *Modern Materials Handling* magazine, and *Factory* magazine.

PIGMENTS CAMPAIGN-1966



How do you protect 25,000 tons of structural steel from the elements? WITH SOLID GALLONS OF RED LEAD!

Red Lead paint is the most effective and economical way to protect structural steel from rust and corrosion. It is a long-lasting, durable paint that can be applied to steel in a variety of environments. Red Lead paint is available in a variety of colors and finishes, and it can be applied by hand or machine. For more information, contact your local Red Lead distributor.



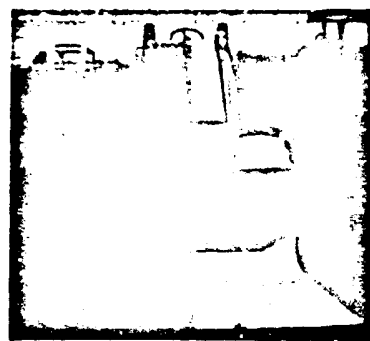
RED LEAD

leaves a lasting impression on a first class bridge

Red Lead paint is the most effective and economical way to protect structural steel from rust and corrosion. It is a long-lasting, durable paint that can be applied to steel in a variety of environments. Red Lead paint is available in a variety of colors and finishes, and it can be applied by hand or machine. For more information, contact your local Red Lead distributor.

The two red lead ads above appeared twice each in the pages of *Engineering News Record* and once in *American City* magazine and *Rural and Urban Roads* magazine.

The two chrome yellow ads below have appeared twice each in *American City* magazine and *Rural and Urban Roads* magazine.



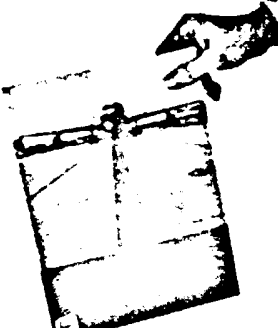
Chrome Yellow

Chrome Yellow is a long-lasting, durable paint that can be applied to steel in a variety of environments. It is available in a variety of colors and finishes, and it can be applied by hand or machine. For more information, contact your local Chrome Yellow distributor.

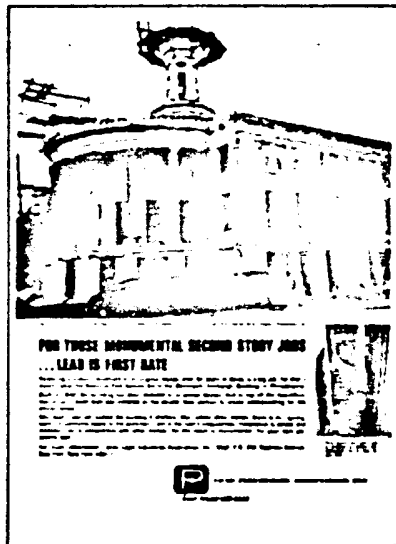
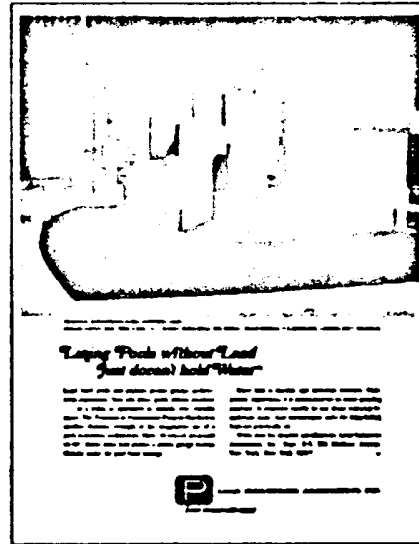
SEND ME MY FREE COPY TODAY

Fill in your name and address on the card below and send it to the publisher. You will receive a free copy of the book *How to Choose the Right Paint for Your Bridge*.

Name _____
Address _____
City _____ State _____ Zip _____



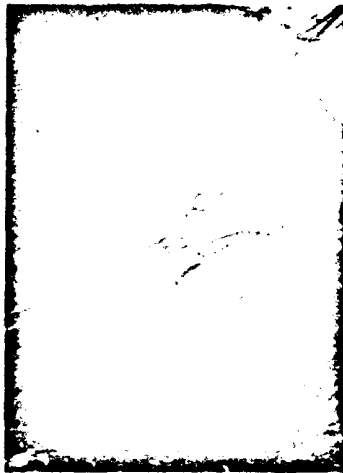
WATERPROOFING CAMPAIGN-1966



These three full page bleed advertisements have appeared twice each in the following publications: *Engineering News Record*, *Progressive Architecture*, and *Architectural & Engineering News*.

A 1/2 page version also appeared in *Business Week* magazine.

ROOFING CAMPAIGN-1966



**For a
standing
seam roof
that will
stand longer,
specify lead**

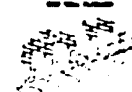





The three spread ads (two on this page and one on the following page) were addressed to the small roofing contractor through the pages of *Roofing, Siding & Insulation* magazine. This was basically a how-to-do it campaign.



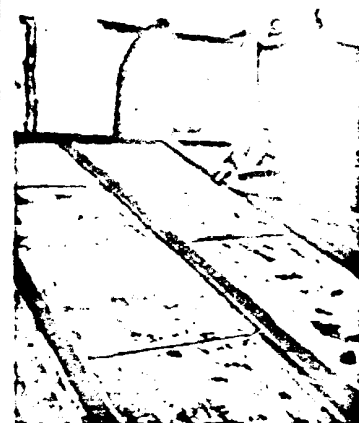
**Lead
flashing
is the
best way
yet!**



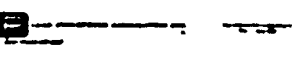
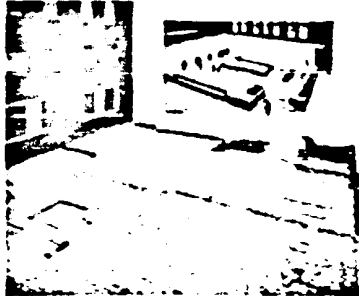



Printed in U.S.A.

ROOFING CAMPAIGN-1966

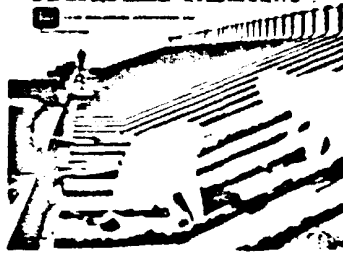


**If you want
to make a
better
batten roof,
batten
down
with lead!**

PUT A LEAD ROOF UNDER YOUR POOL

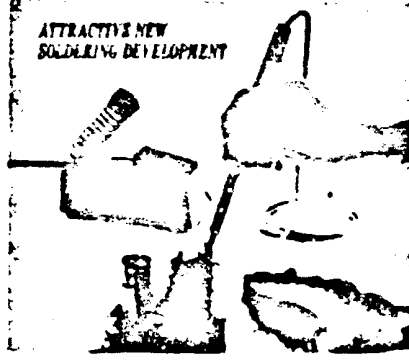
Lead is the best material for protecting your pool from the elements. It is durable, long-lasting, and resistant to corrosion. Lead roofing is also fireproof and can be installed over any existing roof. It is a cost-effective way to protect your pool and extend its life.

The above two roofing ads were run in *Engineering News Record*, *Progressive Architecture*, *Architectural & Engineering News*, and *Business Week*. Each ad appeared twice.

SOLDER CAMPAIGN-1966

**ATTRACTIVE NEW
SOLDERING DEVELOPMENT**



**TINY SOLDERING PENCIL
POINTS WAY TO
BIG ECONOMIES**

The tiny soldering pencil is a new development in the field of electronic assembly. It is a small, hand-held device that can be used to solder components onto a circuit board. The pencil is designed to be used in a similar manner to a standard soldering iron, but it is much smaller and more precise. This allows for the use of less solder, which can result in significant cost savings. The pencil is also designed to be used in a variety of applications, including the assembly of microelectronics and other high-precision components. The tiny soldering pencil is a new development in the field of electronic assembly, and it is expected to become a standard tool for many years to come.

P Lead Alloy Solder

The large full page ad at the top of this page has appeared in *Machine Design*, *Product Engineering*, *Materials in Design Engineering*, and *Metal Products Manufacturing* magazines. It also appeared twice in *Product Design & Development*.

The smaller ads below have appeared twice each in *Product Design and Development* magazine.



LEAD-ALLOY SOLDER

Lead-alloy solder is a type of solder that is made from a mixture of lead and tin. It is a common type of solder used in electronic assembly. Lead-alloy solder is known for its excellent solderability and its ability to form strong, reliable joints. It is also known for its low cost and its ease of use. Lead-alloy solder is available in a variety of forms, including wire, paste, and preforms. It is used in a wide range of applications, from the assembly of simple electronic components to the assembly of complex electronic systems. Lead-alloy solder is a reliable and cost-effective choice for many electronic assembly applications.

P Lead Alloy Solder

12 GREAT REASONS
*why you should choose
lead-alloy solder as a
joining material*

1. Low cost
2. High solderability
3. Excellent joint strength
4. Good resistance to oxidation
5. Good resistance to corrosion
6. Good resistance to fatigue
7. Good resistance to vibration
8. Good resistance to shock
9. Good resistance to heat
10. Good resistance to cold
11. Good resistance to moisture
12. Good resistance to chemicals

For more information, write to: **P** Lead Alloy Solder

CABLE CAMPAIGN-1966



**TROLLING FRISCO BAY
WITH 194,000 FEET
OF LEADED LINE**

U.S. STEEL



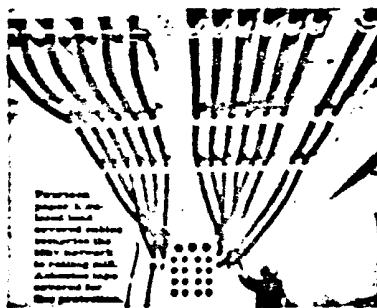
**We'd
like to give
your cable
a good wrap**

It's now you turn doing it better.

The world's best cable wrap is a combination
of two in one - a good wrap and a good wrap.

P

These three advertisements appeared twice each in the pages of
Electrical World and Factory magazine.



**Proven
performance in the
lead line**

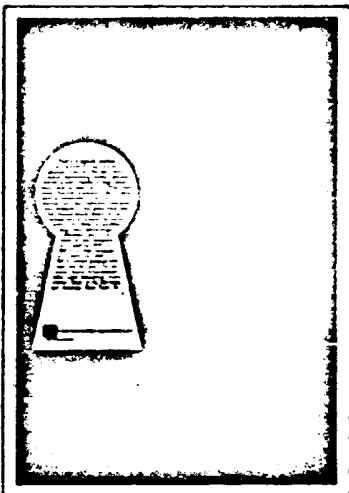
Proven, reliable
performance in
the lead line
to pulling with
American lead
cable for
the project.

**Nine Miles of Lead Sheathed Cable
assure U.S. Steel Top Performance**

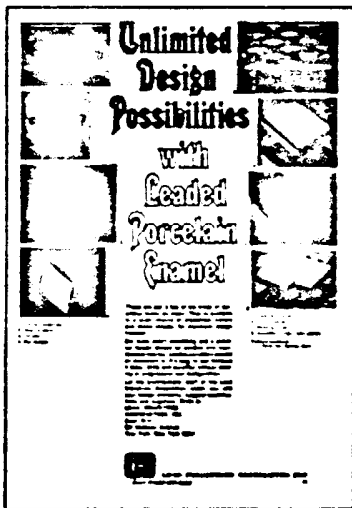
U.S. Steel's lead sheathed cable is the most reliable and longest lasting cable in the world. It is the only cable that can be pulled through the ground without the need for a special pulling compound. It is the only cable that can be pulled through the ground without the need for a special pulling compound. It is the only cable that can be pulled through the ground without the need for a special pulling compound.

P

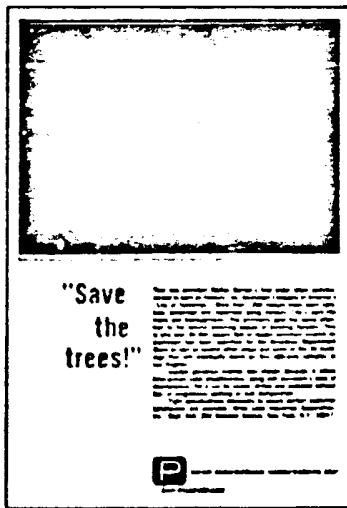
CERAMICS CAMPAIGN-1966



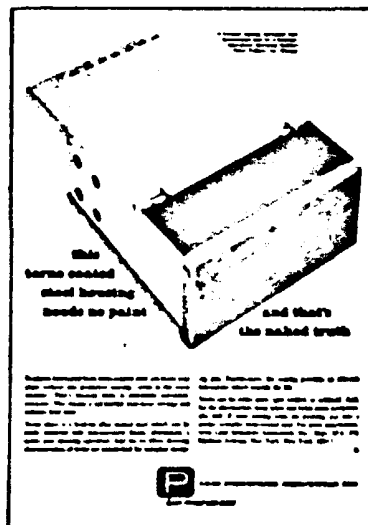
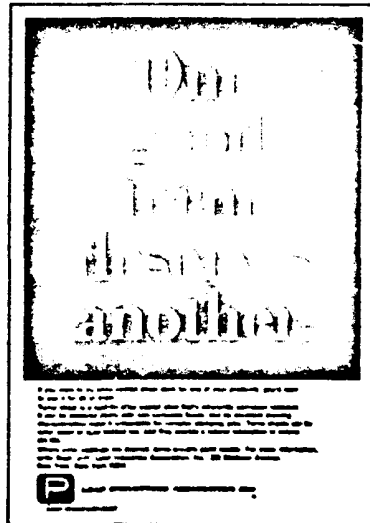
These two advertisements were directed to the ceramic engineer through *American Ceramic Society Bulletin*, *Ceramic Industry*, *Ceramic Age*, and *Glass Industry* magazine. Each ad appeared twice.



The two Ceramic advertisements here were directed to the architect and construction specifier through *Progressive Architecture*, and *Architectural & Engineering News* magazine. These two ads ran in full color.



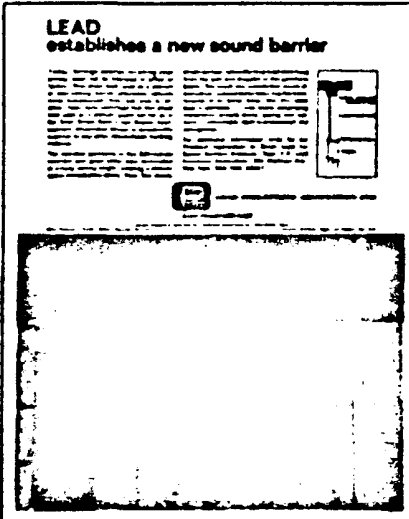
TERNE & DESIGN CAMPAIGN—1966



These ads have appeared twice each in the following publications: *Machine Design*, *Product Engineering*, and *Metal Products Manufacturing*.

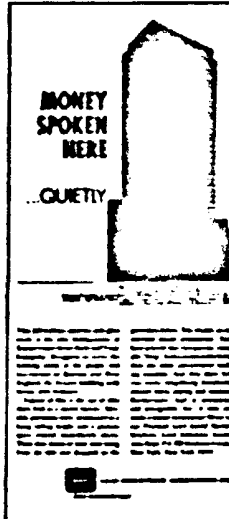
SOUND CAMPAIGN-1966

LEAD
establishes a new sound barrier



**MONEY
SPOKEN
HERE**

...QUETLY



**If you think silence
is golden, get a load
of lead!**

Lead is the answer to noise problems. It's the only material that can stop sound waves. Lead is used in many applications, from soundproofing to radiation shielding. It's a heavy, dense metal that's easy to work with. Lead is available in many forms, including sheets, rods, and pipes. It's a reliable material that's been used for centuries. Lead is a good choice for many applications, and it's a material that's easy to work with. Lead is a heavy, dense metal that's easy to work with. Lead is available in many forms, including sheets, rods, and pipes. It's a reliable material that's been used for centuries. Lead is a good choice for many applications, and it's a material that's easy to work with.



These advertisements appeared twice each in *Engineering News Record*, *Progressive Architecture*, *Architectural & Engineering News*, and *Business Week*.

LIA Annual Meeting

April 17-18, 1967

REPORTS OF THE STAFF

6. - HEALTH AND SAFETY REPORT 1967

by

DON G. FOWLER, DIRECTOR and JAMES C. ROUMAS, ASST. DIRECTOR

Recently I talked with a geo-chemist from a prominent Western University and he remarked that in his opinion lead should be completely eliminated from present day life. Lead should not be mined, smelted or processed. There should be no lead used whatsoever. This man is sincere. And listened to. His influence extends throughout the world.

Let me give you a few examples.

The Swedish Academy of Sciences has recommended to its government that lead should be eliminated from gasoline in Sweden at once and that no more lead should be mined or processed in Sweden.

The Director of the Argonne National Laboratory recently said in Chicago "Each of us is suffering from lead poisoning due to inhalation of gasoline fumes. It is nonsense to protest that it is harmless -- we just don't know and it is a difficult scientific problem to find out. It has been pointed out that in only a few years time there will be no human being who is free from lead poisoning -- that is, we will no longer have a standard of reference."

President Johnson in his January message to Congress on air pollution was a little more temperate. "... when exhaust fumes are sufficiently concentrated, some fuel additives are known to be detrimental to health ... We simply do not know what public health price we are paying for the economic benefits we gain from fuel additives."

There is much more that I could say and quote along these same lines, but I think the foregoing illustrate quite well the fact that our industry is now, and will be in the foreseeable future, facing a most serious challenge. The challenge of pollution; the challenge that is being directed against all industry and industrial products and must be met.

What are we doing to meet this challenge? What should we be doing? Let's look a little bit ahead and assess the outlook and future prospects.

Presented at the 39th Annual Meeting of the
Lead Industries Association, Chicago, Illinois
April 17, 1967

-2-

The challenge must be met and met head on! It will not go away by itself. Senator Muskie removed any doubts on that score in his air pollution hearings in Washington in June. Remember when the automobile industry thought that pollution was something that happened to the other fellow?

Senator Muskie served notice on us in no uncertain terms that lead will not be overlooked as a pollutant and environmental contaminant.

Next came the Commonwealth of Pennsylvania and its hearing on lead which took place in January of this year. And this was only the first of the State hearings. Eventually all of the States will hold similar hearings, and set standards for permissible amounts of lead in air, the so-called Ambient Air Quality Standards. And that is not all.

Next week the State of New York starts hearings on emission standards -- these cover the amount of lead and other materials that you, as a plant operator, will be allowed to discharge from any stack. The proposed New York emission standards for lead call for a reduction of 99% or greater of that amount which would be discharged without a control device. There is an interesting and novel enforcement provision incorporated in this law. Rather than impose a fine, the enforcement officer may seal the operation that is in violation with the Great Seal of the State of New York, and, according to the law, the Seal may not be removed until a satisfactory device has been installed.

Now let's talk a minute about what we are doing to meet this challenge. First, it was necessary to sum up in detail what we already know about lead-- its toxicity to plant and animal life, its contribution to air and water pollution and its distribution in the total environment. Fortunately, as you know, a vast amount of work has been done on lead in the past, especially in the most recent thirty years, and so a lot of information is available. I will not summarize for you this information, even if there were time, since the amount of knowledge available is so huge. Dr. Joseph Calandra did a fine job here last year on this subject and we still have copies of his talk available.

Next we examined very critically the available information on lead and found that we had documentation of facts that lead is not an adverse factor in air or water pollution. Certainly it is present in air and water (as are almost all of the other chemical elements that go to make up our universe) but in extremely small amounts. Lead is also present in our environment everywhere but in small and harmless amounts. We found areas where our knowledge is incomplete. Of course, no one knows everything. So we set out to find out what we needed to know. And this is where the ILZRO research program comes in and I want to mention research in more detail later on.

But before you start any research program you want to know if the job has already been done or is presently being done by someone else. For example, last year the Federal government reported expenditures of well in excess of

-3-

\$700,000.00 on research on lead in the environment. So we have formed with the USPHS the Lead Liaison Committee. Other members of this Committee with us are API and AMA, and the Committee meets to review all lead research in the medical and environmental field. By this means we have reports on all U.S. lead research and we are able to make informed judgments as to current progress and future needs. And our Lead Liaison Committee has already agreed that we need to know more about the lead content of the air and of the U.S. population, so we have activated a Sub-Committee on Surveillance of Population Lead Levels to plan and carry out further studies similar to the Three Cities Survey.

Now let me conclude our account of what we are presently doing, with a brief mention of the research under ILZRO's sponsorship. This is not the time and place for any detailed and complete discussion of ILZRO projects, but let me say that, in general, we have planned research in areas where there are gaps in our knowledge. Major effort is being placed on human exposure to low levels of lead in air, tracing lead from auto exhaust into soil and plants and possible long term effects of low level exposures to animal life. All of this requires a considerable amount of money and we have sought and obtained contributions from the tetraethyl lead manufacturers, the American Petroleum Institute, Public Health Service and U.S. Potters Association to a total authorized expenditure of over \$600,000.00 for 1967.

Finally we come to what we can do and should be doing to meet this most serious challenge. Obviously we must see that the facts are made known widely and to those who are making the decisions, for the facts are in our favor, and when such individuals as the Director of the Argonne Laboratory says that we are all being poisoned by lead fumes, it means that we have not made the best use of the facts. Another example of our industry's failure to get its story across was revealed in a pilot opinion survey made for us. A scientific sample of representative population groups in the country was questioned about several materials that may occur in the environment. An analysis of the answers obtained showed that more people in this country are aware of the harmful effects of too much lead than know anything of lead's uses and advantages. Seventeen per cent of those questioned thought that the major use of lead is in pencils. Only 8% named batteries as a use of lead while 42% said that lead is a harmful material. It seems to me that every one of us must become involved in a positive effort in behalf of representing the value of lead to modern society and in getting a widespread distribution of the facts about lead in our environment.

Possibly the most serious aspect of our challenge today results from activities of the local units of government -- the states and cities -- through the hasty passage and implementing of pollution control laws. There is no question that such laws are needed and that they are going to be passed. But such laws should be technically sound. They may not be unless the facts are placed before the legislature in the right place and at the right time. All of you can help us to help you by letting us know, in time, when legislative study groups are discussing legislation for pollution control.

L.I.A. Annual Meeting

April 17-18, 1967

REPORTS OF THE STAFF

4. - Connel A. Baker, Jr.,
Technical Services Engineer

The subject of batteries certainly has accomplished some kind of breakthrough in the recent past, garnering almost as much press space as sex, led, or Bobby Kennedy - not necessarily in that order.

However, lead-acid has been relegated somewhat to the position of the infamous "brand X" in most of the "blue sky" magazine and newspaper stories. In one sense this could be construed as good - at least not all bad - for it proves that lead-acid does exist outside the test tube, as opposed to most of the exotics.

Another plus factor in all the publicity is its' contribution to the tremendous escalation in interest in our campaign for motive power batteries which, you will remember was actively launched in 1963. In this short period we have seen a wide awakening on the part of the electric utilities to the potential of the electric industrial vehicle. It is safe to say that prior to our program these potential allies had no knowledge of the subject - in fact, they couldn't recognize an electric truck over any other.

To illustrate the change taking place in utility attitude, please note this one-minute commercial that one company is using on their TV weather show. (Run color film.)

The past year saw truck shows, or rodeos, in six major cities from Boston to Seattle. In fact, a show sponsored by Northern States Power Company in Minneapolis has just won the top award for industrial sales promotion activity offered each year by the Edison Electric Institute, the trade group for the privately owned utilities in the U.S.

We were pleased to have instigated these affairs as well as having assisted with format details and soliciting participation from the manufacturers of trucks and batteries; but there was another, more significant development that began to show promise. This is the growing tendency of some utilities to install a program of battery sales campaigning, via the in-plant truck, in their permanent long range planning. Most notable among these is the Commonwealth Edison Company here in Chicago. This company now has an annual action program, with operating funds budgeted, covering market potential, sales and product training, and sales incentives. This comprehensive plan involves about 150 industrial sales engineers who are calling on customers every day, and they now include in their portfolio the subject of battery powered in-plant vehicles. Their initial sales reporting period covering 9 months shows total sales of electric trucks in the Chicago area to be 608 units. No attempt is made as yet to indicate what portion of the total this represents, but a basis for future data is thus being established.

Presented at the 39th Annual Meeting of the Lead Industries Association
Chicago, Illinois, April 17, 1967

-2-

Other companies including similar activities in their programming are Niagara Mohawk Power Corporation, (upstate New York), Houston Lighting and Power, and Public Service Elect. & Gas (New Jersey) although these to somewhat lesser degree than commonwealth.

Actually, gentlemen, we believe that this latter described activity is the most desirable approach for the Lead Industries' proprietary interest. The long term effect of such programming can only result in greatly increased usage of battery powered vehicles in plants and commerce, and is one of the best methods of getting to industry the story of the new technology in batteries controls, and vehicles that should increase our share-of-market even more.

To this end we are now engaged in close negotiations with the manufacturers of lift trucks and batteries to formulate a packaged program to take to the electric utility industry, with the expectations of implementing it in every major company in the country. We have every reason to believe that they will welcome such a program, if it is well done and indicates positive results. A tentative proposal now calls for the package-literature, films, teaching steps, market data etc. - to be designed and furnished by the manufacturers of equipment, and installation procedures into the utility industry to be provided by LIA.

In conclusion I would like to refer briefly to some significant data that should be of interest to you. Since 1963, the year that we activated our campaign for motive power batteries, lead tonnage figures for industrial battery use have grown by almost 50%, from about 40,000 tons to almost 60,000 tons. Last year the total increased by more than 15% over the previous year. Both of these figures more than doubled the rate of growth of gross national product for the same periods.

Even so, our most optimistic estimates indicate that the battery powered lift truck as yet enjoys only 30% of the total of the industrial truck population, so I hope that you will agree that the challenge is still before us.

Thank You.

L.I.A. Annual Meeting

April 17-18, 1967

REPORTS OF THE STAFF

3. - Jerome F. Smith, Technical Services Engineer

A recent editorial in an engineering publication contained an interesting anecdote about a school chum who was kiddingly known as "Card Index Charlie." The author noted that whenever someone wanted to find the answer to some particularly knotty problem—whether in engineering, economics, or most any other subject matter, he could be sure of getting an answer by going to Charlie.

Actually, Charlie was weak in his retention of factual data and information, says the author, but, "he was a veritable card index to the sources of an amazingly wide range of information." Incidentally, Charlie's specialty of knowing where to find the answers must have paid off—he is the technical director of a large corporation now.

My point in relating Charlie's story is this: Today's engineer cannot possibly cope with the reservoir of technical information that pours in from every direction each day—even in his own specialty—so he must therefore, become an expert on information retrieval.

And so, of necessity, I have attempted to become a "Card Index Charlie" on the uses of lead in ceramics, paints and solder at LIA. Of course, as Bruce, Ed and Bake have also noted, we try to keep tabs on what is happening in the other fellow's areas of interest too. Bake and I frequently talk over what he's doing in the industrial battery field—and as a consequence, I feel better able to pick out articles and items that might be useful to him. It's just another pair of eyes and ears as far as Bake is concerned, and he does the same for me. And Ed Martin likewise fills me in on all his architectural jobs featuring that "soft, silvery-gray patinated" material, and Bruce has lots of interesting stories too, about the sound jobs he's dealt with.

Naturally, a "Card Index Charlie" isn't worth his references unless his information gets utilized—and that brings me to my second quote. It's from the Good Book: "Forget not to show love unto strangers, for thereby many have entertained angels, unawares."

Now, I don't mean to imply that the engineers and customers we entertain are angels—at least not the Heavenly kind—but I always have the feeling that one of them just might be an angel to lead. One of the people we give help to may come back one day with a development that could become a second tetraethyl lead market.

Or more likely yet—it may mean the application of lead in some existing product for which it's perfectly well suited but was never used, because somewhere along the line an engineer was not familiar with its properties and past similar applications.

To emphasize the importance of this last statement is difficult without specifics, but I think the solder market is a good case in point. The tremendous interest shown by engineers and designers in all of our solder promotion-ads and literature has certainly proven to my satisfaction that while

Presented at the 39th Annual Meeting of the Lead Industries Association, Chicago, Illinois, April 17, 1967

(2)

solder has been around for years (for fear of having it called an antique material, I hesitate to guess how many years) engineers and even metallurgists know surprisingly little about it. One solder supplier goes so far as to claim that the bulk of his customer service laboratory's work comes either from engineers who know next to nothing about solder or because the engineer attempted an improper application. These are strictly educational problems. The engineer learns all about adhesives, riveting, welding, etc., but never gets a course on soldering. Of course, by delving into some of these soldering problems I'm able to assist Jack McIward in formulating an advertising and publicity program that—on an industry-wide basis—is aimed at educating the design engineer on the applications for solder; the new developments that will assist him in using it; and the latest techniques for heating it once it's in place.

Now, if there's a moral to my story—and I'm told there must be—it's simply that we've pulled together quite a bit of information here and we hope you, our members, as well as your customers, will utilize it to the fullest extent.

L.I.A. Annual Meeting

April 17-18, 1967

REPORTS OF THE STAFF1. - Bruce Pader, Manager
Technical Services

Perhaps we should not have been surprised at the meager effort being made in researching lead-acid storage batteries under Government funding. As the chairman indicated, though, it came as a surprise that such a relatively small amount of money -- \$175,000 -- has been earmarked for lead-acid in the digest of 8000 or 9000 such projects which has been represented as the total of all Federal effort through outside research contractors.

It is natural, when you think of it, to expect that most of the money -- which, by the way, is the only gap conveniently available to us in the public documents and may or may not be a true reflection of the worth of the effort -- it's natural to expect that most of this money will be put where "new" is the magic word. For one thing, if the promise of new battery systems hasn't been proven, it hasn't been disproven, either. For another, put yourself in the shoes of a contract research organization: Which would you choose to work on -- a system that's never been seriously tried with a potential payoff of 600 watt-hours per pound, or to be the tail-end Charlie of more than a century of work by competent workers and, in some cases, giants of science -- Edison, for one -- who have tried to eke another watt-hour out of lead-acid? We don't have much going for us.

We have furnished technical information to researchers looking at batteries as power sources. In one phone call, Connel Baker of our staff supplied a "Perfect Squelch". A learned researcher had phoned long distance to inquire why a lithium silver battery could operate at 39 per cent of theoretical efficiency and Ford's sodium sulfur battery was being touted as 25 to 50 per cent efficient while lead-acid batteries only attained 4 to 13 per cent of theoretical output. (these are published figures, incidentally) Bake replied, "Tell me, where would you buy a lithium silver battery or a sodium sulfur battery?" And this is very much the crux of the situation. Personally, I do not doubt the promise of some of these systems -- but they are, after all, gadgets in a laboratory and nobody is able to talk about their cost, much less shelf life, maintenance costs, etc. But for the very reason that they are unexplored, they are going to be attractive to researchers and are going to demand the major part of battery research effort from public funds.

What is the relative effort being made by type of battery? The attached table shows, the total of Federal projects -- 75 of them that we could find -- which deal with a battery or something like a battery. It includes an item for Exotic batteries at \$9.5 million. These are developments which probably have no bearing on the commercial future of batteries -- one-of-a-kind devices, batteries for high temperature operation on the surface of Venus, etc. What's left of that total can be broken down to show:

Presented at the 39th Annual meeting of the Lead Industries Association
Chicago, Illinois, April 17, 1967

-2-

Fuel cells	\$4,500,000
Silver-zinc	660,000
Nickel-cadmium	330,000
Zinc-air	230,000
Lead-acid	175,000

If you talk with engineers in the battery business and the marketing people charged with predicting what lies ahead for batteries, they will tell you that lead-acid will have no serious competition, at least dollar-wise and tonnage-wise, for 3 to 5 years. By then, zinc-air batteries may take over an appreciable part of motive power requirements because of the greater energy storage (range in terms of an electric car) which they offer and despite what looks like it will be a brutal first cost and capital investment. I give you their opinion without the disclaimers they used in giving it to me, but you should know that they are not complacent about what may happen to lead in five or ten years.

Now concentrate on the little red bar. It represents three projects. Their immediate value will be obvious in their titles:

"Continue to investigate and evaluate lead-calcium alloy grids in storage batteries directed towards the use of such batteries in nuclear submarines"

"Design and development of electrochemical cells with variable electrolyte levels" (assumed by us to refer to lead-acid)

"Investigate high voltage (48-volt) starter systems"

Certainly these appear to be reasonable projects and their immediate value in specific uses is obvious...but are they the key to some glorious future for lead-acid?

In fairness, I should emphasize that we are only talking about publicly supported research here. Battery companies are, of course, making their own investigations and we hope they are evening these odds a bit.

My job today has been specifically NOT to tell you what we should be doing or lobbying for. But it would seem to be evident that somebody needs to inject a modicum of realism into the enthusiasm for new batteries. Certainly enthusiasm is natural when new discoveries hold out such promise, but it does appear that has threatened to go beyond the bounds of what is reasonable both in terms of public research effort and the public's picture of what may be expected. This latter is important to us because it would not be surprising, when the smoke has cleared some years from now, that lead-acid was still the everyday workhorse in the battery stable. Hadn't we better concern ourselves with telling today's battery owner what a bargain he is getting from lead?

#

BREAKDOWN OF FEDERAL RESEARCH PROJECTS
ON BATTERIES AND RELATED POWER SOURCES
FOR 1966

<u>Area of Research</u>	<u>Number of Projects</u>	<u>Expenditure</u>
Lead-acid batteries	3	\$ 174,782
Zinc-air batteries	3	226,711
Silver-zinc batteries	7	657,077
Fuel cells	21	4,522,364
Nickel-cadmium batteries	6	381,541
Exotic batteries and Thermoelectric, thermionic etc.	<u>35</u>	<u>9,586,802</u>
Total all batteries & power source	75	\$15,549,277
Other research related to lead all fields except batteries	29	2,103,171

Total all research funded by Federal Government approx. \$15,500,000,000

Sources: Research & Development Directory for 1966, Government Data
Publications, 422 Washington Blvd., Washington, D.C., 20005. Total research
estimate by NASA and other government agencies.

L.I.A. Annual Meeting

April 17-18, 1967

REPORTS OF THE STAFF

2. - Edwin D. Martin, Architectural Services

I once made a little summary for an editor who was about to write an article on places where lead may be found, or uses to which it might be put in the building business. When I had finished, he called it "enormously detailed" and I was somewhat taken aback myself. There were more than 50 uses all told. Any one of these would not necessarily make a big splash in either the lead or the building business but that would be "looking at trees, not the forest" because the sum total of them all make construction uses the third largest of all uses of lead. The picture has changed radically however, from what it was not too many years ago. To illustrate: We used to use a lot of lead and oil paint in the days when wood structures were more in evidence than they are now. Today we don't use as much lead and oil paint to protect against the weather, but use of porcelain enameled aluminum is on the increase. Lead is an important component in the enameling process so, for lead at least, "the more things change the more they remain the same."

Mentioning enameled curtain walls brings up another aspect however, architecturally speaking this time. I think we have reached the point where there needs to be some relief from the acres of flat, precise surfaces of glass and steel marching endlessly down our avenues.

Architects are becoming aware of this and it is in the avoidance of rigid lines and shiny surfaces that lead lends itself so admirably in several ways. When it is visible, of course.

Next time you are in New York, take a look at Wallace Harrison's Opera House in Lincoln Center. Mr. Harrison has placed a wide band of lead over each of the five arches in the main facade. They are there for exactly the reasons I have just given. Up in Cambridge, Massachusetts, MIT authorities report they are very happy with their lead roof on the Kresge auditorium. One of the major reasons for their satisfaction is the character that roof has lent the building. This is hard to define. But it hasn't anything to do with sharp corners or shiny surfaces, you may be sure! Actually you don't have to go so far as New York or Cambridge to see a lead roof. If you have not already seen it, go over to see Bertrand Goldberg's TV and radio studio building on the Chicago River. One of the most ambitious of recent projects, it is entirely sheathed in lead as well as roofed in the same material. So we have one roof in being, one being built, and one for the future. This last one is up in Albany, New York. It is part of the South Mall project in the State Capitol and is one of the latest in so called "exotically" shaped, cast-in-place concrete structures. It is entirely roofed in sheet lead, and this time with an entirely new technique for anchoring the lead roofing sheets. These three examples alone represent 260 tons of lead.

They also represent three of the rare cases I can point out to viewers. Lead is usually tucked away out of sight. When it is, however, it is because

Presented at the 39th Annual Meeting of the Lead
Industries Association, Chicago, Illinois, April 17, 1967

(2)

it is being used as a waterproofing membrane and the architect or builder wants the peace of mind he can't get any other way. By that I mean that when a material serving such an important function is not only out of sight but out of reach under a variety of expensive fill and finish, he's going to think twice before using it. We were sitting in the office of Harrison & Abramovits one day some time back when one of the staff "thought twice" and asked us to do the impossible—bring the membrane up to the surface and leave it there! This meant leaving a 6 lb. sheet lead membrane out in 160 degree Summer sun and in sub-zero Winter cold with no protection whatsoever. Impossible! Except it happened we were talking, at the time, about a job which would involve upward of 300 tons of lead! Now, when you're talking about figures like that, the impossible begins to look not so difficult after all. So, with some extremely careful detailing and a lot of help from one of our members, we came up with a combination that gave us the key to the problem—if you don't mind my mixing all those metaphors. We've had a huge test panel in place for two years, using this system, with complete success.

I realize, of course, that where I use phrases like "this new system" or "entirely new technique," the meaning remains obscure. I have no slide to illustrate visually, but suffice it to say all these systems, whether MIT, Albany or Test Panel are not new to the world—only to roofing systems and are based on the same fundamental: All of them involve positive restraint of lead sheet within small panel areas. This does not mean loose lock joints; every one of these jobs was lead burned. It does mean that mechanical restraint of the lead, in combination with an alloy which increases the yield point, has reduced expansion to an easily manageable fraction. We feel that when present testing programs are complete, we will be able to handle with confidence, membrane waterproofing or sheet lead roofing in whatever size and whether covered or not.

These, in combination with thin sheet lead plenum barriers, lead plated copper (both of which have great potential) and our usual array of other uses in the building field, give us an arsenal of weapons I think is rather formidable. I am happy with it and I feel the number of users will expand steadily as the examples I have noted here become more generally known.

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LEAD INDUSTRIES ASSOCIATION, INC.STATEMENT OF INCOME, EXPENSES, AND FUND BALANCE
FOR THE YEAR ENDED DECEMBER 31, 1966

	OPERATING FUND
INCOME:	
Assessments:	
Membership.....	\$100,477.90
Industry Development.....	615,761.25
Health and Safety Public Relations Program.....	96,656.85
Total assessments.....	812,896.00
Transfers from Employees Pension Plan Fund.....	6,357.50
Interest on savings bank deposits.....	5,020.32
Miscellaneous (including sales of publications).....	1,519.51
Total income.....	825,793.33
EXPENSES:	
Salaries and payroll taxes.....	210,200.30
Temporary office help.....	1,018.91
Rent.....	19,440.00
Office supplies.....	6,150.43
Office services.....	7,261.41
Travel (includes entertainment and luncheons).....	42,636.80
Association dues.....	2,585.50
Meetings (net of fees).....	1,472.12
Telephone and telegraph.....	5,488.51
Books and subscriptions.....	1,222.80
Insurance (business and group life).....	2,330.48
Printing.....	610.00
Mailing.....	7,318.16
Legal, accounting, and consultation fees.....	4,536.60
Furniture and fixtures.....	1,762.88
Pension plan costs.....	17,638.50
Abstracting service.....	11,002.37
Robert L. Ziegfeld Memoriam.....	16,250.00
Miscellaneous.....	908.59
Cost of publications - net (see Schedule A).....	71,556.34
Advertising and promotions (see Schedule B).....	308,348.10
Expenses - net.....	739,738.80
EXCESS (DEFICIENCY) OF INCOME OVER EXPENSES FOR THE YEAR..	86,054.53
FUND BALANCE, JANUARY 1, 1966.....	98,791.62
FUND BALANCE, DECEMBER 31, 1966.....	\$184,846.15

See Notes to Financial Statements.

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LEAD INDUSTRIES ASSOCIATION, INC.NOTES TO FINANCIAL STATEMENTS

1. Expenditures for furniture, fixtures, and equipment are not capitalized, but charged to expense at time of purchase.
 2. The Contractholder's (Bankers Life Company) Fund balance at January 1, 1967 under the Association's non-contributory insured participating deposit administration group annuity contract for employees' pensions was \$79,607.80.
 3. As of January 1, 1966, the operating funds and savings bank deposits aggregating \$126,869.62 comprising the International Lead Research Organization Fund were transferred to International Lead Research Organization, Inc.
 4. As of January 1, 1966, the savings bank deposit of \$6,357.50 of the Employees Pension Plan Fund was transferred to the Operating Fund.
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LEAD INDUSTRIES ASSOCIATION, INC.FOR THE YEAR ENDED DECEMBER 31, 1966

SCHEDULE A

COST OF PUBLICATIONS - NET

"Lead".....	\$ 36,987.63
Reprints.....	8,119.38
Sweet's Catalogs.....	14,546.89
Roofing Handbook.....	2,000.83
Proceedings of International Conference (cancel- lation of 1965 accrual).....	(1,500.00)
Batteries.....	3,994.70
Mailing List Conversion.....	5,906.88
Construction and Architectural Flyers.....	1,500.03
TOTAL.....	<u>\$ 71,556.34</u>

SCHEDULE B

ADVERTISING AND PROMOTIONS

Advertising space:	
Solder.....	\$ 10,278.24
Template.....	9,225.45
Batteries.....	32,964.89
Construction.....	30,857.86
Design.....	6,527.12
Ceramics.....	11,991.48
Noise.....	28,654.45
Cable.....	9,210.68
Pigments.....	18,443.54
Total.....	158,153.71
Advertising production.....	20,002.29
Conventions and exhibits.....	15,798.74
Apprentice contests.....	1,321.10
Health and Safety Information Service.....	20,461.73
National Sports Shooting Foundation.....	650.00
Motion Picture.....	15,070.37
Health and Safety Public Relations Program.....	70,648.58
Illustration and Publicity.....	5,595.10
Miscellaneous.....	646.48
TOTAL.....	<u>\$308,348.10</u>

() Denotes red figure.

Chicago, Illinois

April 27-28, 1967

ANNUAL MEETING OF THE MEMBERS OF THE
LEAD INDUSTRIES ASSOCIATION, INC.

Members Present

Max Adler
 Peter J. Callahan
 E. V. Frauley
 A. E. Lee, Jr.

 Robert J. O'Hara
 John A. Rathjen
 R. L. Hennebach
 H. E. Howe
 R. M. McGeorge
 R. D. Mushlits
 W. P. Roe
 J. S. Smart, Jr.
 Simon D. Strauss
 C. M. Maternan
 Carl H. Cotterill
 Seigo Yamamoto
 Howard L. Young
 R. A. Young
 E. A. Custer
 David P. Molt
 George R. Throop
 Charles F. DeArmond
 David J. Rowland
 William J. Veenis
 Frank P. Barton

 Julian S. Bers
 Leon M. Rose
 R. J. Hopkins

 Otto F. Bauer
 Sidney E. Sweet
 Dennis Taylor
 William C. Zeck
 Don del Dotte
 M. E. Kinore
 George A. Larson
 Harold E. Lee
 John F. Rittenhouse
 G. P. Sorrell
 Iver Thompson
 Harold Fargey
 Herbert M. Lewis
 Norman Liedtke
 F. H. Tolcher
 C. B. Anderson
 D. V. Badgley
 S. P. Miller

Representing

Allied Smelting Corporation
 American Metal Climax, Inc.
 " "
 Anax Lead & Zinc Division,
 American Metal Climax, Inc.
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 American Smelting & Refining Co.
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 American Zinc Company
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 The Anaconda Company
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 G. A. Arvil Company,
 Lead Product Division
 Bers & Company, Inc.
 " "
 Broken Hill Associated Smelters
 Pty., Ltd.
 (C. Tennant, Sons & Co.)
 " "
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 " "
 The Bunker Hill Company
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 " "
 C & D Batteries, Eltra Corp.
 Cerro Sales Corp.
 " "
 Cominco, Ltd.
 " "
 " "
 Delco-Remy Division, GMC
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Members Present

Cecil Bassett
Albert W. Fitch, Jr.

W. D. Atteberry
D. E. Carter
C. F. McGraw
Joseph G. Cassara
Kenneth W. Green
Ray Kenny
E. G. Lyons
E. R. Anderson
C. E. Colvin
J. A. Costello
Thomas M. Smylie
Robert B. Fulton
W. Allen Taft, Jr.

Harvey D. Ferer
Robert P. Restrepo

Willard F. Haas
David M. Milke
William P. Milke
William P. Milke III
Philip Lindstrom
L. J. Randall
Harold J. Sliper
Russell E. Wallace
V. H. Shea, Jr.

E. Boller
S. Marx
E. W. Steinbach
J. V. Murph
Byron Rothpletz, Jr.
Richard L. Swain

Jack Belay
Lloyd H. Northneck
J. Jennings
Donald C. McDonald
R. W. McKittrick
Emmett A. Torney
Warren T. Trank
Henry Whitson
Morris P. Kirk
George C. Bless

Bob Oatey
T. D. Hay, Jr.
L. Jack Miller
P. E. Shortal, Jr.
Harold A. Krueger

Representing

Dixie Lead Company
.

Eagle-Picher Industries, Inc.
.

The Electric Storage Battery Co.
.

Ethyl Corporation
.

E.I. du Pont de Nemours & Company
.

Aaron Ferer & Sons Company
General Battery & Ceramic Corp.

Hammond Lead Products, Inc.
.

Helca Mining Company
.

Homestake Mining Company
.

Houston Chemical Corp.

Industrial Smelting Company
.

International Smelting & Refining Co.
Murdock Lead Company
.

National Lead Company
.

(Morris P. Kirk & Son, Inc.)
.

The L. R. Oatey Company
Olin Mathieson Chemical Corp.
.

Ozark Lead Company

(3)

Members Present

Joe Boritzer

Malcolm Bonyage
 Robert E. Doelling
 John R. Engleborn
 Andrew Fletcher
 Charles D. Henderson
 William F. Hoffman
 Carleton C. Long
 William F. McCullough
 Robert H. Ramsey
 J. A. Reising
 Joseph G. Sevic
 John W. Sherman
 Verne W. Simkins
 William Turney
 L. K. Wheelock
 Francois H. de Montmorin

Gerson M. Levyns

Edward J. Brunnick

Leonard L. Cohen
 C. K. Conard
 Vincent E. Dorman
 George W. Emery
 John J. Lannon

D. J. Herts
 Richard W. Conley

Howard Novasol
 Reuben Wiener

Leo Hledsco
 B. F. McKinney
 Robert M. Quenell

Representing

Revere Smelting & Refining Corp.

St. Joseph Lead Company

Societe Minere et Metallurgique
 de Penarroya (International Selling
 Corp., agents)

Tsumeb Corporation Ltd.
 (Ametalco, Inc., Agents)

U. S. Smelting, Refining & Mining Co.

The Victory White Metal Co.
 Hyman Wiener & Sons

Western Lead Products Co.

Chicago, Illinois

April 27-28, 1967

ANNUAL MEETING OF THE MEMBERS OF THE
LEAD INDUSTRIES ASSOCIATION, INC.

LEAD INDUSTRIES ASSOCIATION, INC. STAFF

John L. Kimberley	Executive Vice President
David M. Bordinia	Secretary & Treasurer
Bruce Fader	Manager, Technical Services
Connel Baker	Technical Service Engineer
Jerome F. Smith	Technical Service Engineer
Don G. Fowler	Director of Health & Safety
James C. Roumas	Ass't. Director of Health & Safety
John McIward	Advertising Manager
Edwin D. Martin	Manager, Architectural Services

INTERNATIONAL LEAD ZINC RESEARCH ORGANIZATION, INC.

Schrade P. Radtke	Executive Vice President and Director of Research
-------------------	--

REPRESENTED BY PROXY

R. A. Gardiner	Gardiner Metal Company
E. C. Knowlton	Revere Copper and Brass Inc.
Jens Jensen, Pres.	Pend Oreille Mines & Metals Co.
R. G. Conklin	Vulcan Lead Products Company
H. T. Morgan	MacGregor Lead Company
D. J. Christie	Newmont Mining Corporation
A. M. Callis	Federated Division-Asarco

Chicago, Illinois

April 17-18, 1967

ANNUAL MEETING OF THE MEMBERS OF THE
LEAD INDUSTRIES ASSOCIATION, INC.

GUESTS

Jim Stafford
M. A. McDuff

American Metal Market
Atlas Chemical Industries, Inc.

Paul Osterman

Bache & Company, Inc.

William F. Butler
Peter Heylin
Jacques Jerusalem
G. Leenders

The Chase Manhattan Bank
Chemical & Engineering News
C Royale Asturienne des Mines
Cie des Metaux d'Overpelt Lommel
et de Corphalie
The City Transit Company

M. W. Owen

T. L. Diamond & Company, Inc.
Division Lead Company
Dresser Minerals

Theodore L. Diamond
Joe A. Stone
Robert A. Flake
L. M. Hermes, Jr.

A. J. Payne

Electrolytic Zinc Company of
Australia Ltd.

Clemens Schuller

Fachvereinigung Metallhütten und
Umhmelwerke K.V.
Fangel & Company
Foundry

Holger Fangel
Jack C. Miske

Max L. Feldman
Clarence K. Morehouse
Harley Reed
J. V. Stuppia
R. C. Littlefield
George P. Millington, Jr.
Don J. Priebe
Herman Becker-Fluegel
Jose Flores
Harvey C. Hatch

General Electric Company
Globe Union

Gould-National Battery

W. R. Grace & Company

H. L. Harvill
Tom Brown
Carl Thompson

H. L. Harvill Manufacturing Co.
Hercules Incorporated
Hill and Knowlton, Inc.

George H. Eddleman
Rupert Bing
Yves du Parc
Ralph Kleinsorge
Thomas M. Whiston
Keith W. Bennett

Imperial Metal & Chemical Co.
INDUSSA Corp.

Iron Age

Sunao Tokunaga

Japan Lead Zinc Development, Assoc.

(2)

GUESTS

Clark L. Wilson

Abner A. Laine
 Frank M. Cannon
 Eugene B. Schuler
 Nikola Petricic
 Walther Casper
 Friedrich V. Dallwitz
 Robert Peckham
 Robert Rodgers
 David Friedlander
 Masami Domoto
 Atsushi Kurayama
 Hiroyuki Ohashi
 Koji Sakamoto
 E. F. Schulze

Louis A. Casarea
 P. R. Jeffey
 John S. Holland
 Nick Cotter

E. Mugden
 Hans G. Thalheim

William R. Cooke
 Edward S. Frohling
 Ernst L. Frank
 A. A. Scharf
 Daniel E. O'Keefe
 Dan Kelly

Edward Parket
 Oscar Rosenfeld

George Andre-Dumont
 A. de Jaer
 Michael J. Jablonski

James A. Orser
 Jean Adamian

Thomas Checkram

Paul V. Higgins
 Joseph G. Schiffer
 C. E. Price
 William E. Sturm

S. A. Hiscock
 R. Lewis Stubbs

Lead-Zinc Producers Comm.

Materials Engineering
 Metal Traders, Inc.

Metalchemic Commercial Corp.
 Metallgesellschaft A-G

Metals Week

Metalworking News
 Mitsui Mining & Smelting Co., Ltd.

Montanore, Inc.

National Zinc Company, Inc.

New Park Mining Company
 Northern Miner

The Ore & Chemical Corporation

Parsons-Jurden Corporation

Philipp Brothers

Primary Metal & Mineral Corp.
 Purchasing Week

Reliance Smelting & Refining Corp.
 Oscar Rosenfeld Inc.

Societe Generale Des Minerais

Steel Magazine

Texas Gulf Sulphur Company
 Transamine

United States Steel Corporation

Edward H. Weiss & Company

West Penn Power Company

Zinc Development Association
 Zinc & Lead Development Association

Chicago, Illinois

April 17-18, 1967

ANNUAL MEETING OF THE MEMBERS OF THE
LEAD INDUSTRIES ASSOCIATION, INC.GOVERNMENT REPRESENTATIVES

Henry C. Armstrong	Canadian Embassy
John R. Babey	U. S. Department of Commerce
Donald H. Dery	U. S. Bureau of Mines
Jack G. George	Government of Canada, Department of Energy, Mines & Resources
Vernon G. MacKenzie	U. S. Department of Public Health Service
Joseph McCaskill	U. S. Department of the Interior
T. D. McGee	Government of Canada, Department of Trade and Commerce
Albert D. McMahon	U. S. Department of Mines
Edgar L. Newhouse	U. S. Department of Commerce
John W. Patterson	Government of Canada, Department of Industry
Joe B. Rosenbaum	U. S. Bureau of Mines
Harold Schroeder	U. S. Bureau of Mines
E. J. Talbert	U. S. Department of Commerce