LIA-123-G(3)

NEWS RELEASE From: Edward H. Weiss & Company, Inc
277 Park Avenue
New York, New York 10017
R. G. Spilsbury
(212) 826-7054

For: Lead Industries Association, I
New York, New York

NOTE TO EDITORS: Complete and detailed papers of all those summarized in this release may be had upon request.

LEAD INDUSTRIES ASSOCIATION HOLDS 40TH ANNUAL MEETING IN MONTREAL

-- Many Important Papers Presented --

MONTREAL, APRIL 3, 1968 -- Today, the Lead Industries Association opened its 40th annual meeting at the Queen Elizabeth Hotel in Montreal, the first to be held in Canada. The meeting was called to order by John R. Englehorn, Vice President of St. Joseph Lead Co. and President of the Association, who presided. He presented Mr. Robert Hendricks, President of Cominco Ltd., who welcomed the membership to Canada.

After disposing of routine business in turn, Mr. Englehorn presented the speakers of the day who presented technical papers before the group. First on the program was E. D. Martin member of the American Institute of Architects and a staff member of LIA who presented a paper entitled, "How the Architect Uses Lead." Following this, C. H. Allen, Executive Secretary of the Association of American Battery Manufacturers, talked on the "Outlook for Lead-Acid Batteries." Next on the program was R. D. Greer, Manager of Marketing-Mining Products, Jeffrey Manufacturing Co., who presented a paper on "Lead-Acid Battery Powered Mine Locomotives." His talk was followed by "A Summary of Electric Car Developments" given by C. A. Baker of the LIA staff. At the end of Mr. Baker's talk the session adjourned for luncheon.

When the meeting reconvened, S. F. Radtke, Executive Vice President and Director of Research of International Lead Zinc Research Organization (ILZRO), discussed the "Expanding Horizons for Lead". Following this, J. L. Cotsworth, President of Veneered Metals Inc. gave a paper on "Adhesive Bonding Lead Sheets." Last speaker of the afternoon was R. S. Darnell, who delivered a paper prepared by R. D. Becker, Manager, Alloy Department, Cerro Copper & Brass Co. The subject was "New Uses of Low Melting Alloys."

A summary of these papers follows:

"HOW THE ARCHITECT USES LEAD" -- Mr. Martin, in his opening remarks noted that lead as used in the building field is nearly always used as a barrier. He cited examples of lead used for roofing and flashing as impenetrable to the weather. As a membrane (a swimming or reflecting pool lining), it shuts out the intrusion of water. In acoustical applications it resists the passage of sound. In heavy building construction, under the bearing plates of columns, it screens out most vibration. And, finally, in hospitals and clinics, it is an impassable barrier to X-rays.

Not all the uses of lead are for functional purposes. Mr. Martin cited Bertrand Goldberg, Chicago architect, who said he used lead for the roof of the Performing Arts building in Marina City, Chicago, primarily for aesthetic reasons. He felt that the soft grey sheen that lead develops with weathering was an excellent foil for the rather large areas of concrete used in the project. One of the fringe benefits gained by Mr. Goldberg on the project was the fact that the lead had the ability to attenuate sound and was an excellent shield for radio frequency interference, both advantageous in a theatre and a radio and television station.

It was also pointed out that the office of Harrison and Abramovitz had the same reasons in mind when they chose lead for the roof of their rather exotic "Meeting Hall" in the South Mall in Albany. Another application used for aesthetic reasons was the tiny fountain and pool at the Laurence G. Payson House in the New York Hospital which, in spite of its small size, represents a breakthrough because it has the membrane right on top. It was designed by the firm of Frost Associates in New York City. In speaking of the reason he chose lead, Mr. Culin, Associate in charge said, "I used it because of its unique and lasting beauty."

Another application of lead that does not benefit from the fanfare of publicity is its use as a waterproofing material. Such a use is notable in the extensive repairs and restoration work being done to the State Capital building in Jefferson City, Missouri. Originally designed by Tracy and Swartout and built in 1913, the stone work on the staircases and promenades was in disrepair. Mr. Bernard McMahon, St. Louis architect, used lead under the rebuilt stairs to seal out the encroachment of water. In this fashion, he picked up about 8,000 square feet of 10-foot high office space and 6,000 square feet of storage space as a bonus. Mr. McMahon stated, "I would use no other membrane than sheet lead for any area waterproofing."

Also reviewed in the talk was a project done by the firm of Epple and Seaman in Newark for the Newark College of Engineering. This involved the use of sheet lead as plenum barriers to soundproof the newly erected Library on the school's new campus.

In closing, Mr. Martin pointed out that while it is almost impossible to determine the present tonnage demand in the building field, it was interesting to note that shipments of sheet lead have remained fairly constant at 27,000 tons, in spite of a drastic decline in one of its traditional markets, lead for chemical construction. Mr. Martin attributed this steady market for sheet lead to the fact that the slack was taken up by the building field.

"THE FUTURE OUTLOOK FOR LEAD-ACID STORAGE BATTERIES" -- Mr. C. H. Allen's studious and well researched paper, in essence, was a summary of all reports and rumors of new battery developments of non-lead types. For years these batteries have threatened to replace the lead-acid battery but to date have failed to materialize. According to Mr. Allen, the federal government has been spending considerable sums in an effort to find a way of making a better battery. The greatest portion expended on attempts at non-lead types. He noted that for every dollar being spend on lead-acid battery research, $15 to $20 is being spent to find a replacement for it. He added that it was unlikely that the lead-acid SLI (Starting - Lighting-Ignition) battery would lose its place in the market.

Looking into the possibility of non-lead batteries replacing the lead-acid type as a possible power source for highway vehicles, Mr. Allen felt that engineers thought some form of exotic type may become suitable for a lightweight, short range highway vehicle within 10 to 15 years. However, he was quick to point out that automotive research was pointed in the direction of improving internal combustion engine performance in the hope of substantially reducing or almost eliminating the air pollution problem in the near future.

Mr. Allen reviewed some 12 reports, including opinions expressed befo[illegible] the Senate Sub-Committee on Air and Water Pollution maintenance problems inherent in their trailing cables, led to the development of what Mr. Greer's company calls the Ramcar. The design evolved from an intensive study of shuttle cars and other mine haulage vehicles, developed design parameters that set such physical characteristics as height, width, turning radii and tonnage requirements.

The final machine that evolved was of straightforward design, was battery powered and required no trailing cable. The battery chosen was built for 250 volts and would last for a full shift under normal operating conditions. Where unusual conditions existed, the car was built to change its own battery. This voltage was selected because it meant that standard motors and controls, familiar to mine maintenance personnel, could be used. And, along with this is the fact of physics that higher voltages allow better power use and distribution on the vehicle as well as having a lower voltage drop on the time-discharge curve. This meant that the car would not slow down as the battery power was used toward the end of the shift.

The tramming power of the vehicle is put to work directly to the wheels through simple speed reducers and chain drives. For unloading, the expensive conveyor gave way to hydraulic rams that unload the unit in 15 seconds. Unique about the design is that the battery is in a single compartment. When a change is indicated, hydraulic jacks raise the battery box from the tractor's frame and the unit is trammed to a pallet where the battery is lowered. Using a jumper cable, the car is moved to a fresh battery which is placed into position and lowered into the vehicle. The whole job only takes five minutes and the car is back in service.

So easy is the unit to operate, an inexperienced driver can become proficient in about a week. The driver's location is such as to permit good visibility in both directions as well as providing maximum safety. Since the car is capable of discharging a full load of up to 25 tons with little or no spillage, there is no clean-up problem at the dumping point.

Because this new concept in mine haulage has been freed from the unwieldy cable, mine plans are not limited to specific travel routes. The longer haul distance can be a part of the freedom in mine planning, and this becomes of tremendous benefit on pillar sections.

Basic data obtained in testing the new unit in several mine locations was programmed into an engineering computer and the computer's mining simulation indicated that the mine could produce up to 35% greater tonnage using such a unit in place of a standard reel type shuttle car.

"A SUMMARY OF ELECTRIC CAR DEVELOPMENTS" -- In opening his talk, C. A. Baker of the LIA staff indicated that the total production of electric road vehicles in the United States was, at an educated guess, about ten cars. With this preface, he traced developments, utilizing illustrations from the GM - University of Pennsylvania hybrid; Goulton Industries - American Motors unit designed to utilize the yet-to-be-developed lithium battery; GE's hybrid using lead-acid batteries in combination with nickle-cadmium batteries; The Alden StaRRcar, a combination road and rail unit; the West Penn Power "Allectric" that was built to prove that it could be done; Westinghouse's Marketeer which was taken out of production because the government has not as yet established specific safety standards for electric cars. Mr. Baker noted that this car would be on display in the LIA booth at the Design Show later this month.

Of the on-the-road cars now in operation, Mr. Baker pointed to the Mars II, a Renault conversion with lead-acid batteries. The producer of this car will price and deliver the unit. He is convinced that lead-acid batteries will do a reasonable job in traction service, within the limits of second car definition. The range for this car is claimed to be 120 miles at a speed of 43 miles per hour.

Another unit currently undergoing tests is the Ford "Comuta" that uses lead-acid batteries. This English car is very similar to the Scottish "Scamp" which is typical of the UK mini-car concept. Four other electric cars were shown at the Turin Auto Show last fall and all featured lead-acid batteries. The Japanese have an entrant in the field in a Toshiba conversion that has a top speed of 62 miles-per-hour. At 30 mph, it has a range of 50 miles.

One thing in common with all these units is the fact that they were all designed for use with starting-lighting-ignition batteries which have a very shallow discharge but are readily available. Industrial batteries are commercially available but are quite heavy. Weight is no problem here, however, as it counterbalances the loads encountered in fork lift service. These batteries are low in watts/hour per pound, and higher in cost per energy unit but are designed to operate long hours between charges. Battery manufacturers cautiously agree that the industrial battery might be improved from eight watt/hours per pound to as much as 16 watt/hours per pound. They also agree that there really hasn't been any motive to improve the industrial battery in today's market since, until the advent of the electric car potential, the product filled the need.

"EXPANDING HORIZONS FOR LEAD" -- Dr. S. F. Radtke pointed out that International Lead Zinc Research Organization recently had moved away from defensive research and into new product research and development. According to Dr. Radtke, the greatest advances to be scored to date have been in the organolead program. This series of programs, in fact, have been successful in opening new markets in such applications as anti-fouling paints, wood preservatives, lubricant additives, polyurethane foam catalysts, cotton preservatives, anthelmintic agents, antibacterial agents, molluscicides for the control of bilharzia disease, rodent repellers and rot resistant textiles among others.

Dr. Radtke also felt that the compact electric vehicle and the intra-city bus represented major opportunities for the lead-acid battery. He stated that these opportunities would be pursued through further research and development work to optimize cost, life and engineering designs. This will include construction of prototype vehicles to obtain the detailed design and engineering data required and to thoroughly assess performance under operating conditions.

"ADHESIVE BONDED LEAD SHEETS" -- J. L. Cotsworth, in his opening remarks, explained that the adhesive joining or bonding of flat rolled metals for commercial purposes is a relatively new field in which very few people were knowledgeable. He did admit that several member companies of the Association, as well as the International Lead Zinc Research Organization had, in fact, engaged in metal to metal adhesive joining research and had published scientific papers relative to their findings. Looking int the immediate future, he predicted that within a span of about five years, millions of square feet of metal to metal laminations would be made. And, these will be formable, will be interchangeable with regular sheet metal, and will impart many distinct advantages to the end products they serve.

According to Mr. Cotsworth, a leading firm in the field of metallurgically bonded metals (well established in the field of coinage) predicted a billion dollar market for this type of product. It is not known if this estimate included adhesive bonded metals. Metallurgical bonding is accomplished with pressure, often accompanied by heat. With adhesive bonding an organic substance is put between two metal surfaces. In either case, the metals can be pulled apart. Chemists have now become aware of this adhesive metal bonding market and have spent large sums to develop a wide range of adhesives to mate metals.

He described an application by a naval architect that utilized lead bonded to steel for X-ray shielding on shipboard. Five tons of lead were applied to three tons of steel for this job with excellent results. The material was formed on a conventional press brake with little or no difficulty. Admittedly, special techniques were employed to prevent mashing the lead in shearing. Also care and ingenuity was used in the bending to avoid thinning the lead at the corners. Experimentally, lead has been adhesively bonded to other metals to form a laminate to be used as a roofing roll or as shingles. It was put through embossing rolls to simulate a shake and put on the outside of a building with lead nails as a test. The attraction of lead in the roofing field is its well known permanence, its dull color and its ease of installation.

To outline the uses of the material, Mr. Cotsworth said it could be used for shielding, X-ray applications, radiation, sheet metal, roofing rolls and shingles, for process equipment and in sound and vibration control. He estimated that the use of lead in the adhesive bonding field would amount to 20,000 tons within five years.

"LEAD IN LOW MELTING POINT ALLOYS" -- A review of the fact that combinations of certain elements melted at lower temperatures compared with the melting point of the individual elements involved was the starting premise for R. D. Becker's talk as delivered by R. S. Darnell. He continued with the statement that lead is usually required for use specifically in "Fusible Alloys", which he defined as those which melt at less than 300^{o}F (149^{o}C). He also pointed out that the importance of the lead was all out of proportion to the amount used, compared to the other areas of uses for lead.

The number of known alloy compositions that fall into the realm of fusible alloys is in the hundreds. They range in melting temperatures from 95^{o}F (35^{o}C) to 300^{o}F (149^{o}C). The lead content averages from 1% to 95% with the average at about 25%.

It was explained that there were two reasons for the use of lead in these alloys. One was the fact that its physical properties are necessary to the performance requirements of the alloys in which it is used. The second, and minor reason, is its low cost.

Advantages of the low melting point alloys were listed as reusability, high density, low melting temperature, high reclamation, ease of removal and reproducibility. They can be widely used on such applications as anchoring, for chucks, jigs and fixtures, for cores, in dies and punches, for models and patterns as well as for molds. All in all, Mr. Darnell said that Mr. Becker felt that low melting temperature alloys had come of age. Properly understood and applied, these alloys are versatile industrial tools of almost unlimited value and potential.

###