

ANNUAL MEETING OF THE MEMBERS OF THE
LEAD INDUSTRIES ASSOCIATION

Chicago, Ill.

April 24-25, 1957

The annual meeting of the members of the Lead Industries Association was held on Wednesday and Thursday, April 24-25, 1957, at The Drake Hotel, Chicago, Ill.

MEMBERS PRESENT

Representing

H. Cohn	Alpha Metals, Inc.
Harold Hertzog	do
William R. Black	The American Metal Co. Ltd.
E. J. Brennick	do
P. M. Carpentier	do
C. K. Conard	do
V. E. Dorman	do
R. P. Hermasdorf	do
J. J. Lennon	do
David T. Steele	do
M. L. Trilsch	do
Charles F. Barber	American Smelting and Refining Co.
Kenneth C. Brownell	do
K. H. Brownell	do
William R. Clancy	do
Charles Earl, Jr.	do
M. Robert Herman	do
A. J. Phillips	do
H. Carl Sohl	do
Simon D. Strauss	do
E. Worth Vaughan	do
Charles W. Ambler	American Zinc, Lead & Smelting Co.
Robert Ammon	do
Kenneth A. Phillips	do
Richard A. Young	do
Howard L. Young	do
Frank P. Barton	The G. A. Avril Co., Lead Products Division
Julian S. Bers	Bers & Co. Inc.
A. Y. Bethune	The Bunker Hill Co.
John D. Bradley	do
Roger H. Cutting	do
M. E. Elmore	do
Harold E. Lee	do
Roger H. McConnell	do
Ernest A. Torney	do
W. G. Woolf	do
Aubrey Fletcher	Broken Hill Associated Smelters Pty., Ltd., (C. Tennant, Sons & Co., Agents)
Ivor Thompson	do
John W. Hanley	Cerro de Pasco Sales Corp.
R. C. Bell	Consolidated Mining and Smelting Co. of Canada, Ltd.
R. Hendricks	do
A. D. Turnbull	do
O. C. Wilson	do
A. Olaf Wolff	do

Annual Meeting Minutes

-2-

April 24-25, 1957

REPRESENTING

Henry L. Day
 Wray D. Farmin
 C. E. Bassett
 Harold F. Jones
 S. J. Stickley
 Wm. D. Atteberry
 William R. Dice
 Paul R. Hamilton
 T. Spencer Shore
 Miles M. Zoller
 Samuel Edlow
 K. W. Green
 E. R. Anderson
 J. A. Costello
 Morris Foodin
 E. L. Newhouse, III
 Harvey Ferer
 R. A. Gardiner, Jr.
 Alan Stevenson
 A. R. Devereux
 Don Goldsmith
 H. E. Lawrence
 Willard F. Haas
 W. P. Wilke, III
 Clarence Glass
 F. A. Wardlaw, Jr.
 W. F. Murdock
 John M. Giberski
 Charles E. Crumpton
 E. R. Dondorf
 D. A. Merson
 Hugo A. Batti
 Phil W. Ruppert
 W. J. Welch
 Clark L. Wilson
 Kenneth T. Gordon
 John J. Forst
 William A. Cokey
 J. J. Sharkey
 Charles C. Shackford
 R. E. Spofford
 C. Merrill Chapin, Jr.
 Robert F. Doelling
 Andrew Fletcher
 Charles R. Ince
 W. T. Isbell
 Carl C. Long
 Donald K. Lourie
 John G. Wenn
 Jack C. Pierce
 Victor Besso

 S. K. Droubay
 L. A. Creslow
 Oscar A. Glaeser
 G. H. LeFevre

Day Mines, Inc.
 do
 Dixie Lead Co.
 E.I. duPont deNemours & Co.
 do
 The Eagle-Picher Co.
 do
 do
 do
 do
 The Edlow Lead Co.
 The Electric Storage Battery Co.
 Ethyl Corp.
 do
 Federated Metals Division
 American Smelting and Refining Co.
 Aaron Ferer & Sons Co.
 Gardiner Metal Co.
 do
 Goldsmith Bros. Smelting & Refining Co.
 do
 do
 Hammond Lead Products, Inc.
 do
 International Smelting & Refining Co.
 (Anacosta Sales Co., Agents)
 Murdock Lead Co.
 National Lead Co.
 do
 do
 do
 do
 do
 do
 New Park Mining Co.
 The Okonite Co.
 Olin Mathieson Chemical Corp.
 do
 do
 John A. Roebeling's Sons Corp.
 do
 St. Joseph Lead Co.
 do
 do
 do
 do
 do
 do
 Shattuck Penn Mining Corp.
 Societe Miniere & Metallurgique de
 Penarroya (International Selling Corp. Agents)
 United Park City Mines Co.
 United States Smelting Refining & Mining Co.
 do
 do

Annual Meeting Minutes

-3-

April 24-25, 1957

REPRESENTING

F. S. Mulock
F. C. Smyers
P. L. Warner
Howard Novasell
Jacob M. Viener
Reuben Viener
C. M. Fenner
Leo L. Bledsoe
Robert N. Quenell

United States Smelting Refining & Mining Co.
do
do
Victory White Metal Co.
Hyman Viener & Sons
do
Western Electric Co. Inc.
Western Lead Products Co.
do

REPRESENTED BY PROXY

Allied Smelting Corp.
Eucston Lead Co.
Hecla Mining Co.
Knapp Mills, Inc.

White Metal Rolling and Stamping Corp.

Pent Oreille Mines & Metals Co.
Phelps Dodge Copper Products Corp.
Revere Copper & Brass Inc., Foil Division
Vulcan Lead Co.

GUESTS

C. B. Anderson
D. P. Barnard
Philip R. Blanc
J. F. Buskirk
W. D. Carson
W. E. Collins, Jr.
R. L. Cook
D. J. C. Copps
John O. Edwards
Cecil Fitch, Jr.
E. L. Frank
D. B. Fraser
William E. George
Arthur J. Gervais
C. Elmer Gischel
Webster Hodge
F. E. Jeffrey
Gaspard Leenders
Louis Lutwiv
Donald E. McClure
W. T. Mahood
Edward G. Orkin
Ken Rose
James V. Stafford
B. P. Steiner
Stanley Stewart
Mortimer J. Sullivan
Louis Trachte
Robert Van De Venne
Kurt Weinberg
Joseph Zimmerman

Delco Battery
Standard Oil Co. (Indiana)
Indussa Corp.
Delco Battery
Delco Battery
Atlas Powder Co.
University of Illinois, Dept. Ceramic Eng.
Atlas Powder Co.
Canadian Mines Branch
Chief Consolidated Mining Co.
Phillips Bros. Inc.
Canadian Mines Branch
Consolidated Zinc Pty. Ltd.
International Minerals & Metals Corp.
O. S. Tyson & Co. Inc.
Battelle Memorial Institute
National Zinc Co. Inc.
des Metaux d'Overpelt-Lommel et de Corphalie
Daily Metal Reporter
The Northern Miner
Atlas Powder Co.
Metal Traders, Inc.
Automotive Industries
American Metal Market
Cumberland Battery Mfg. Co.
Steel Magazine
International Minerals & Metals Corp.
Societe Generale des Minerais
do
International Minerals & Metals Corp.
Daily Metal Reporter

GOVERNMENT REPRESENTATIVES

O. W. Bilharz
O. W. Bishop
W. W. Hopton
- Linden L. McElvenny
Richard H. Mote
Felix Edgar Wortzer

Office of Minerals Mobilization, Dept. of Interior
U.S. Bureau of Mines
Office of Minerals Mobilization, Dept. of Interior
U.S. Bureau of Mines
do
U.S. Department of Interior

Annual Meeting Minutes

-4-

April 24-25, 1957

LEAD INDUSTRIES ASSOCIATION

Robert L. Ziesfeld, Secretary-Treasurer
 David M. Borcina
 Manfred Bowditch

Edward J. Mullarkey
 Homer S. Yetman

Dr. John H. Koenig, Consultant

The minutes of the previous meeting of April 24-25, 1956, were circulated to members after that meeting and no changes or corrections were received.

REPORT OF THE PRESIDENT

The president, Andrew Fletcher, opening the meeting. His introductory remarks are attached.

REPORTS OF DIVISIONS AND COMMITTEES

Reports of the Industry Development, Technical Steering, Ceramics Technical, and Red Lead Technical Committees, the Metallic Lead Products Division, Solder Committee, Health and Safety Division, were presented and are attached. (Exhibit "A").

REPORT OF SECRETARY-TREASURER

The secretary-treasurer informed the membership that his report had been circulated to members and is attached as Exhibit "B."

NOMINATING COMMITTEE

Mr. Simon D. Strauss, chairman of the Nominating Committee, reported for his Committee, composed in addition to himself of Messrs. R. A. Gardiner, Jr., C. H. Ince, H. F. Jones and W. J. Welch, and placed in nomination the following slate:

BOARD OF DIRECTORSREPRESENTING

J. D. Bradley
 K. C. Brownell
 J. A. Costello
 W. H. H. Cranver
 H. L. Day
 Andrew Fletcher
 Clarence Glass

K. W. Green
 J. A. Martino
 F. S. Mulock
 Reuben Viener
 Jean Vuillequez
 Frederick Walker

William Wilke, III
 M. M. Zoller

The Bunker Hill Co.
 American Smelting and Refining Co.
 Ethyl Corp.
 New Park Mining Co.
 Day Mines, Inc.
 St. Joseph Lead Co.
 International Smelting and Refining Co.
 (Anaconda Sales Co., Agents)
 Electric Storage Battery Co.
 National Lead Co.
 United States Smelting Refining and Mining Co.
 Hyman Viener & Sons
 The American Metal Co. Ltd.
 Federated Metals Division
 American Smelting and Refining Co.
 Hammond Lead Products, Inc.
 The Eagle-Picher Co.

There being no further nominations, the slate was unanimously elected.

Annual Meeting Minutes

-4-

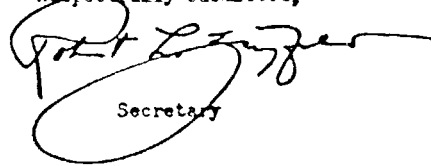
April 24-25, 1957

ADDRESSES AT MEETING

The following papers were also delivered at the annual meeting, with copies made available to those members interested:

Tetraethyl Lead	Dr. D. P. Barnard
Lead in Construction	Roger H. Cutting
Lead Compounds in Industry-A Review	Dr. Alex Stewart and Hugo A. Ratti
Storage Batteries	B. B. Steiner
Problems in Plumbism	Dr. William E. George
Combating Atomic Radiation	Dr. Charles E. Crompton
Lead in Ceramics	Prof. R. L. Cook
Lead Cable Sheathing	Charles C. Shackford
Current Market Outlook - Lead & Zinc	Dr. Joseph Zimmerman
World Supply - Lead & Zinc	R. H. M. te
World Consumption - Lead & Zinc	R. Hendricks

Respectfully submitted,



Secretary

REPORT OF HEALTH AND SAFETY DIVISION*

Manfred Bowditch, Director

Because of the varied nature of our health and safety work, it is very difficult to compress an adequate picture of a year's activities into a five-minute frame. Not forgetting the old adage about lies, damn lies and statistics, I therefore ask you to indulge me to the extent of saying that, in the last 12 months, 8 national and 6 local meetings were attended, that, of 47 visits paid, 23 were to industrial plants and offices in 8 states and the District of Columbia, the balance being to hospitals, clinics and medical offices, governmental agencies and educational institutions, and that, of some 110 inquiries responded to of which records were kept, 50 per cent were from industrial sources, 25 per cent from physicians, 15 per cent from governmental units and 10 per cent from educational sources. To this I should add that many of the questions asked us involve no little time and effort in coming up with an adequate reply. Let me now explain some aspects of these bare figures.

LEGISLATION

Proposed legislation of possibly injurious import to our industries has been watched in a number of jurisdictions, and with apparently satisfactory outcome to date. Worthy of special mention are the New York State air pollution control proposals, now satisfactorily resolved in Senate 342, on which we have worked closely with the Associated Industries of New York State, and Maryland House Bill 146, a revival of the 1950 Toxic Finishes Bill, prohibiting all use of lead paints in a variety of applications, which failed of approval. The effective use of the American Standard for such paints sponsored by our Association, in opposing this proposal, was a gratifying aspect of this last.

PRECAUTIONARY LABELING

A special category of legislation and regulation calling for constant vigilance is that of the so-called precautionary labeling. Here again we appear to have been successful in securing reasonable wording and uniformity among the states and municipalities. A relative newcomer in this field is the Council on Drugs of the American Medical Association, to which we have offered our services in their plan to develop model legislation on labeling. In the reverse situation, having been on the books for many years, are the pharmacy laws of many of the states, recently shown to be interpretable as applicable to such products as litharge. The implications here are so obvious and so onerous that the problem has been placed before the Manufacturing Chemists' Association with the hope that they will take the lead in the arduous task of securing corrective amendments.

CHILDHOOD LEAD POISONING

As the major source of trouble is the flaking of lead paint in the ancient slum dwellings of our older cities, the problem of lead poisoning in children will be with us for as long as there are slums, and because of the high death rate, the frequency of permanent brain damage in the survivors, and the intelligence level of the slum parents, it seems destined to remain as important and as difficult as any with

*Presented at the 29th Annual Meeting,
Lead Industries Association,
April 24-25, 1957, Chicago, Ill.

which we have to deal. Our support of the work at the Children's Medical Center in Boston continues, though at greatly reduced cost, and the reports of the studies at The Johns Hopkins Hospital partially supported by us have finally been received and distributed. As of help in this situation, we have kept in close touch with the Poison Control Centers inaugurated by the American Academy of Pediatrics, of which, on April 1st, there were 67 in operation throughout the country, most of them on a 24-hour a day basis.

SERVICES TO INDUSTRY

As was shown in my statistical introduction, the majority of the services which we render are to industry. It was pleasant to learn, from a copy of a letter from one of our members which came to us recently, that the writer thought that "the L.I.A. has in recent years done some very fine work in the medical field." Perhaps as important as any to our membership as a whole is the work of the subcommittee of the American Standards Association of which the speaker is chairman, which has secured acceptance by the main committee of an increase of 33 1/3 per cent in the standard for lead dust and fume in the air of work places, and of more than 200 per cent for two of its compounds. Our present hope is to add a third compound to the latter category, with resultant added relief to industry from unduly stringent regulation. A proposal that these figures might have to be reduced for work with lead at high altitudes was negated through a conference of authorities in industrial toxicology and physiology. Of the last year's visits and conferences with industries, we know that at least three have led directly to better understanding of the control of lead hazards; our Health and Safety Bulletins are issued with the same purpose. Because of the seemingly boundless energy of our Australian guest, who is including upwards of 20 American and Canadian industrial centers in his present visit, the time given to making arrangements for Dr. George, from whom we are to hear this afternoon, has been as considerable as it has been pleasurable.

SERVICES TO PHYSICIANS

Second in number only to those to industry are those services which we render to the medical profession. The need for much of this work is attributable to the lack of adequate instruction in subjects of industrial health in our medical schools, with the resultant widespread ignorance of these problems, including that of plumbism. A corrective believed to be of some consequence has been the distribution of reprints of Dr. Johnstone's address at our St. Louis meeting last year. Upwards of 3,000 copies were mailed to all members of the Industrial Medical Association, and it is now in use in three medical schools as an aid to teaching. Another method of disseminating information is through our reprint service, comprising some 40 publications of which supplies are maintained for issuance as required. The drug popularly known as EDTA continues to be by far the best treatment for lead absorption, but it is now known to have toxic properties of its own, and its abuse, mainly as a substitute for proper dust and fume control, must therefore be more than ever watched. Such a situation was well described by a Colorado physician who wrote that an employer had told him that he no longer worried about lead poisoning, now that he had EDTA, the doctor commenting that "his plant hygiene was about what you would expect under these circumstances."

-3-

Report of Manfred Bowditch

"PLUMBIC PSYCHOSES"

The absurd allegations as to the causation of lead poisoning with which we have to deal, as well as the crazy uses to which lead products are occasionally put, may well be grouped together as "plumbic psychoses." Of the former, the most notorious of last year was the published report that Ambassador Clare Booth Luce had been poisoned by lead and arsenic, "arsenate of lead" as it was called, falling from her bedroom ceiling. Because of the lady's prominence, it was deemed wise to avoid any public controversy, but steps were taken, including a visit to the offices of the Chicago Tribune, which we believe served somewhat to reduce the dissemination of the story. The statement that paint, plaster and newspapers are all sources of lead poisoning, made at a medical meeting early this month, is currently being dealt with. To combat the undue fear of lead glazes as used on ceramic products, the services of an industrial physician and an industrial hygiene engineer have been secured as speakers at the annual meeting of the American Ceramic Society two weeks hence. I have referred to a lack of plumbic enlightenment in the medical profession. That they are not alone in this shortcoming was brought home to us some months ago by reports that a lead color, applied to the interiors of drinking glasses by a manufacturer in one of the southern states, had led to poisonings, and only the other day came a letter from this concern, stating that they were being sued in the amount of \$50,000, and suggesting that the L.I.A. might like to assume some part of this responsibility.

In concluding this quite inadequate account of a year's health and safety activities, let me add that their execution has involved participation in the affairs of six committees of the National Safety Council, the American Standards Association, the American Industrial Hygiene Association and the American Association for the Advancement of Science.

Annual Meeting Minutes

Exhibit "A"
April 24-25, 1957OPENING REMARKS OF THE PRESIDENT*

Andrew Fletcher
President, Lead Industries Association
President, St. Joseph Lead Company

This is the 29th annual meeting of the Lead Industries Association to which I'm privileged to welcome you. It looks like one of the best attended we have ever had, but our efforts have always been directed at quality rather than quantity, and obviously we have that here too.

Our meetings are somewhat unique because of the nature of L.I.A. itself which embraces in its membership both the producers of the raw material and the manufacturers who consume it. Thus when we sit down at these gatherings we are able to discuss our problems with the benefit of both viewpoints. I think this arrangement is particularly valuable because when we producers of lead attempt to expand the markets for our product, we have the valued cooperation and advice of our customers who are in closest touch with those markets.

I won't go into a detailed account of our activities because following me this morning you will hear a series of reports covering our most important operations. You will also hear a number of experts in their respective fields discuss the outlook for a variety of lead products, which is just as important to the lead miner as to the manufacturers of the products themselves.

I would just like to add that I think we can be proud of L.I.A.'s recent progress. We have put our methods of financing on a more equitable and flexible basis. We are operating independently of the Metal Powder Association. We have materially expanded our research and industry development activities with entirely new advertising and research programs included. We have placed greater emphasis on the successful solution of many health problems which plague our industry and we are held in the highest respect by health authorities for our forthright approach to them. We have moved our offices for greater efficiency and economy. We have established a retirement and pension plan. And we have accomplished all these things without affecting the normal functioning of L.I.A.

Few of us probably realize the confidence and respect in which the Association is held in both government and industry circles. This is invaluable to our industry because, as a result, outsiders turn to us for help in full confidence, that whether it be a technical, marketing, health or economic problem relating to lead, they will get a prompt, complete and dependable reply.

So I will simply thank all the members for their interest and cooperation and express the hope that it may be continued to our mutual benefit for a long time to come. I would also urge all members to make use of the Association to the fullest extent and to let the officers and staff know what your problems are so that L.I.A. may help where industry-wide help is appropriate.

At a recent meeting in New York, Mr. Alfred Baer of London, vice chairman of the Consolidated Zinc Corp. Ltd., stated that lead and zinc producing companies throughout the world spend millions for exploration to find more lead and zinc, to improve recovery through better production methods and metallurgical processes, in short to produce these metals in greater abundance, but all too little toward developing new products and markets to consume these metals. He urged greater support for this type of work through our industry associations, both here and abroad. I heartily concur in his views.

*Presented at the 29th Annual Meeting of the Lead Industries Association, Chicago, Illinois, April 24-25, 1957

REPORT OF THE INDUSTRY DEVELOPMENT COMMITTEE*

John J. Lennon
The American Metal Co. Ltd.

During 1956 the Industry Development Committee provided funds for the major part of the promotional, educational and research activities of the Association. Over 80 per cent of the funds for these activities were subscribed by ten sellers of pig lead in the United States as follows:

The American Metal Company, Limited, including Tsumeb
American Smelting & Refining Co.
The Anaconda Company, including International Smelting and
Refining Co.
Broken Hill Associated Smelters Proprietary Ltd.
The Ruckel Hill Co.
Cerro de Pasco Sales Corporation
The Consolidated Mining & Smelting Company of Canada, Limited
St. Joseph Lead Company
Societe Miniere et Metallurgique de Penarroya
United States Smelting Refining and Mining Company, Inc.

These funds were distributed among the Metallic Lead Products Division, the Pigments and Chemicals Division, and the Ceramics Division. In the case of the first two divisions mentioned, manufacturers also subscribed part of the money but the Industry Development Fund was the sole support of the Ceramic program. Detailed reports will be made later at this session on the specific activities of these three programs.

Based on a survey of the atomic industries, financed in 1955 by the Industry Development Fund, and on the recommendations of the Technical Steering Committee of the Association, the Industry Development Committee recommended to the Board a program to promote the use of lead in the atomic industries.

During the summer of 1956 this Committee met and decided that it would be willing to supply all the funds for the industry development activities of the Association. Consequently, this year it is subscribing all the money for the operations of the three programs already mentioned, as well as a modified program on atomic nuclear radiation shielding, recommended in place of the original program which was tabled by the Board. The modified program involves secret "Q" clearance for a staff member of LIA and the part-time work in visiting various atomic installations throughout the country, meetings of organizations engaged in the atomic industries, and collection of as much authentic data as possible about the use of lead in these industries. Thus the Association will be able intelligently to assist people with shielding or other problems involving lead and will have authentic data for such other use as the Technical Steering Committee, the Industry Development Committee, and the Board of Directors may deem advisable at a later date.

*Presented at the 29th Annual Meeting, Lead Industries Association,
Chicago, Ill., April 24-25, 1957

Industry Development Committee

-2-

John J. Lennon

This Committee also set up a Contingency Fund to be used if necessary during 1957 for either of two research programs which the Technical Steering Committee has under consideration but is not yet in a position to recommend.

In addition, as of 1956 the Industry Development Fund is providing money for the publication of the Association's external house organ, LEAD, so that it may be published quarterly instead of semi-annually, which it was prior to 1956. The funds subscribed for industry development through this Committee in 1957 will be approximately double what they were in 1956, or about \$115,000, of which \$95,000 is ear-marked for programs already in operation and the other \$20,000 as a contingency fund for research.

The establishment of the Industry Development Fund has materially simplified the financial structure of the Association and has also provided for greater flexibility on the part of the Association in the promotion of the use of lead and its products.

While the sellers of pig lead are now providing all the cash for the Association's industry development activities, the value of the contributions of manufacturers in the form of technical assistance to the Association through service on the various divisional committees should not be overlooked. Through this type of cooperation with the manufacturers, who have close contact with the markets for these products, the industry can expect to get the most out of the money spent for its various activities.

Development of new uses and expansion of present known uses for lead are of great importance to all sectors of the industry.

In addition to the work which is being done by the Industry Development Committee and the various technical committees of our Association, all of us must be alert to new ideas and be aggressive in the search for new and expanding uses for lead. Undoubtedly many of our member associates and others interested in lead are carrying on research and development work, but the work of the Association can be furthered only with your continued interest and cooperation. The Industry Development Committee earnestly invites your suggestions and your assistance in helping to achieve our goal, which is to increase the consumption of pig lead.

REPORT OF THE TECHNICAL STEERING COMMITTEE*

Dr. Albert J. Phillips
Vice President and Director of Research
American Smelting & Refining Company
Chairman, Technical Steering Committee, LIA

Nuclear Radiation Shielding

As mentioned in the report of the Technical Steering Committee at the last annual meeting, early in 1956 a recommendation was made for a program involving the use of lead in nuclear radiation shielding. This recommendation was later tabled by the Board of Directors. The matter was reconsidered by the Technical Steering Committee and a modified program was recommended in its place.

Cable Sheathing

The task group on Lead Cable Sheathing, established by the Technical Steering Committee in 1955, has been constantly at work, principally on the problem of solving the continuous extrusion of lead alloy cable sheath. This Task Group recently reported that it had stimulated research on this problem by Pirelli, Milan, one of the most important continuous press manufacturers in Europe and a sample of P-3 alloy tubing, submitted by Pirelli, on preliminary examination seems pretty good. In addition, John Robertson Company, principal continuous extrusion press manufacturer in this country, reports that they expect to have the experimental press ready by Fall, having already placed the order on their books and done some redesign work on the screw and other parts. This program seems to be progressing, though somewhat slowly, due to the time involved in building a new machine.

It was originally thought that this research would have to be supported financially by the L. I. A. but has been worked out in such a manner that the Association has not been committed to any expenditures. The Task Group is following the work closely to provide technical assistance and to recommend financial assistance if necessary.

This Task Group is, therefore, being continued under the Chairmanship of Mr. A. A. Smith, Jr., of the American Smelting and Refining Company, Research Laboratories, with the following members:

G. M. Bouton, Bell Telephone Laboratories
W. T. Ieball, St. Joseph Lead Company
E. J. Morrell, Phelps Dodge Copper Products Corp.
C. J. Snyder, Anaconda Wire & Cable Company
R. J. Wiseman, The Okonite Company

*Presented at the 27th Annual Meeting, Lead Industries Association, Chicago, Ill., April 24-25, 1957

Dr. Albert J. Phillips

Technical Steering Committee

- 2 -

Ceramics

The Technical Steering Committee passed favorably on a recommendation for the expenditure of \$7,500 for three research fellowships on the use of lead in ceramics at three different leading schools of ceramics in the United States. This recommendation was later approved by the Industry Development Committee and the Board.

Industry-Wide Research

The Technical Steering Committee reviewed the overall status of industry-wide research in our industry. A subcommittee was appointed and bids were solicited from leading independent research organizations to make a detailed survey of the industry to indicate in what general directions research might be profitable. Three proposals were received. A revised proposal has been submitted by Arthur D. Little, Inc., and it is expected that the subcommittee will shortly make a recommendation to the Technical Steering Committee.

Monograph on Lead

The Technical Steering Committee recommended that the Association undertake the editing of the A.C.S. monograph on lead. A number of chapters are already in the hands of the Association and the completed work is to be delivered to the publisher on January 1, 1958.

Technical Steering Committee

It is our belief that the Technical Steering Committee has served a useful purpose in performing the function for which it was established - to advise on technical matters. It has, in less than two years, stimulated or at least advised upon activities in radiation shielding, ceramics, cable sheathing and the monograph on lead and is preparing for a systematic approach to industry research.

There is still much to do and this committee should grow in value to the industry.

REPORT OF THE CERAMICS TECHNICAL COMMITTEE*

Dr. John H. Koenig, Director
 School of Ceramics
 Rutgers University
 Chairman, Ceramics Technical Committee, L.I.L.

The principal accomplishment of the Ceramics Technical Committee during 1956 was the completion of the Manual on "Lead in the Ceramic Industries." Early in January there was a general mailing to all members of the American Ceramic Society and members of the various State Ceramic associations and the Porcelain Enamel Institute who were not members of the national group. Since then, several hundred copies have been mailed out on request to students of the various ceramic colleges and to individuals who have requested copies through reviews appearing in the trade papers or through seeing copies in the hands of associates. In addition, nearly 700 copies have been supplied to members of the L.I.L., most of which have been paid for at cost. In all over 5,000 copies of the book have been distributed to date.

The reaction has been gratifying; many ceramic industrialists took the time to write and praise this contribution to the ceramic industries and indicate they wanted the supplements as they came out to keep their book up to date. The response from professors in the various ceramic schools leaves no doubt but what it will be widely used in the ceramic courses. A very surprising response came from the electronics industry - where a number of new ceramics of great importance in electronic components involve the use of lead.

I humbly believe the committee did a good job on the technical write-up but much of the credit should go to Mr. Ziegfeld and his staff for also the excellent mechanics and layout which makes this brochure so attractive.

The committee's recommendations for the ceramic program in 1957, approved by the Board of Directors, included an advertising program, establishment of college fellowships, and establishment of permanent exhibits for the various ceramic schools.

Advertising Program

The initial program includes 12 one-page black and white advertisements each in the "Ceramic Industry" and the "Bulletin of the American Ceramic Society." It was decided to prepare six advertisements, each to appear twice in each publication during the year. The first advertisements appear in the March issue of these magazines.

The six subjects which the Committee felt would be most advantageous were:

- (a) Low temperature enamels on steel
- (b) Glass decorating colors
- (c) Lead in glazes
- (d) Low temperature enamels on aluminum and aluminized steel

*Presented at the 29th Annual Meeting, Lead Industries Association,
 Chicago, Ill., April 24-25, 1957

Dr. John H. Koenig

- 2 -

Ceramics Technical Committee

- (e) Ceramic bodies, including electronics
- (f) Glass

Each ad includes mention of the general benefits derived from lead in ceramic products. O. S. Tyson & Co. is the advertising agency.

Establishments of College Fellowships

The purpose here is to encourage more research on lead compounds in ceramic products as well as to acquaint and interest students and staff members of the several schools with the advantages of lead in ceramics and the new potential fields where increased effort was considered to be highly promising. These were:

Development of lead enamels for low firing on steel and effect on color - University of Illinois.

Evaluation of lead as a component of typical ceramic bodies, this investigation to concentrate, if possible, on bodies, other than electronics - Rutgers, The State University.

Studying lead as a component of typical glazes for sanitary ware and sewer pipe - to be assigned to another University - not yet selected.

While industrial research is underway in some of these areas, the University results will be published and serve to stimulate an increased overall effort. For example, we know there is intensive industrial research underway on lead enamels for low firing on steel but the results are held confidential.

The grant to Rutgers, The State University has already been made and the University of Illinois has accepted a grant for the academic year 1957-58.

Establishment of Permanent Exhibits

These exhibits, to be placed in the various ceramic schools, will depict lead materials and why, where, and how they are used in the ceramic industry. The display will be about three to four feet. In addition to the lead materials, the exhibit will include lead-containing ceramic products,

- (a) enameled aluminum tile
- (b) optical glass
- (c) glazed sparkplug
- (d) glass decorated piece
- (e) radiation shielding glass
- (f) glass-bonded mica
- (g) decorated china dish
- (h) ceramic dielectric

among others.

Dr. John H. Koenig

- 3 -

Ceramics Technical Committee

The Committee will also work on supplements for the Manual. Examples of possible subjects for early supplements include:

- (a) Electrical data on lead glasses as used in bonding crystals, e.g., glass-bonded mica.
- (b) Low temperature ceramic dielectrics fluxed with lead compounds.
- (c) Data on solder glasses, and of course data obtained from the three University projects sponsored by the L.I.A.

Papers will be presented at the Annual Meeting of the American Ceramic Society next month, as follows:

"Control of Health Hazards in the Ceramics Industries - Medical and Toxicological Phases" by Rutherford T. Johnstone, M.D.

"Control of Health Hazards in the Ceramics Industries - Engineering Phases" by W. G. Hazard, Industrial Relations Division, Owens-Illinois.

"Low Temperature Ceramic Dielectric Bodies Fluxed With Lead Compounds" - from Rutgers School of Ceramics.

"Volatility Studies of Lead Silicate Melts" Robert L. Halse and Ralph L. Cook, Department of Ceramic Engineering, University of Illinois.

Last year, in our report to you from the Ceramics Technical Committee (just recently formed), we reviewed the established uses of lead in ceramic products, the relatively new uses of lead in ceramic products and research underway which looked promising for new uses of lead in ceramics.

I believe I am correct in mentioning that your Committee was highly impressed with the extensive present and potential uses of lead in ceramic products, as we worked on assembling this information for the Manual.

If any of you have not read this Manual, may I urge you to do this. I am sure that you also will be impressed by what you read.

If you will permit a few thoughts in conclusion:

There are two marked trends in ceramic research and development programs - one involves lower temperature in production of many ceramics with unique engineering properties and the other much higher temperature ceramics, e.g., refractory coatings, liners for missiles, nuclear applications. The latter does not involve lead compounds with their low melting characteristics. However, the steadily increasing interest in the lower temperature ceramics will mean much to you as lead producers. At a symposium held early this year in New York on low temperature glasses, the need for lead in most, if not all, of the applications discussed was stressed throughout. It can be concluded without question that in addition to the many established uses for lead in ceramics, as noted in the Manual, by far the greater part of all new ceramic developments in the low temperature field will involve the use of lead compounds.

REPORT OF THE RED LEAD TECHNICAL COMMITTEE*

Dr. L. L. Carrick
University of Michigan
Chairman, Red Lead Technical Committee

The Red Lead Technical Committee held seven meetings during the year beginning April 24, 1956 and ending April 24, 1957.

The Red Lead Technical Committee has been functioning for 14 years. Its inception was the outgrowth of an order issued by the Navy banning the use of red lead paints on all Navy ships, large or small. The United States Maritime Commission retained the use of red lead paints. Today the paint specifications of these two branches of government have been consolidated.

To the committee was assigned the problem of recovering as much as possible of the lost market. Owing to the advent on the market of new paint vehicles other than linseed oil, which possessed the desirable feature of drying in a few hours, the committee began an investigation of red lead paints, new and old, to develop new pigment-vehicle formulations which would show new evidence of the superiority of red lead performance. Paints were to weigh less per gallon, dry in six hours or less and afford the anticorrosive protection associated with red lead-linseed oil paints. The paints were to have performance records better than competitive paints, all of which was accomplished and publicized in our series of 11 Red Lead Technical Letters to date, each of which was sent to a list of 10,000 to 12,000 users and prospective users of red lead paints.

The success of our study is best portrayed by the reaction of the users. General Specifications for Ships of the United States Navy, S-19, July 1, 1956, was issued. The use of red lead is made mandatory for many purposes where it was formerly optional and only a few years ago prohibited. A few high lights from S-19 are:

"Where welding has been completed, alkyl red lead primer, formula 116, shall be used in lieu of formula 84 and vinyl red lead primer, formula 119, in lieu of formula 120....."

"Exterior surfaces shall receive a complete second coat of primer, formula 116, except where a vinyl system is specified. Edges, rivet heads, welding, and other protruding objects shall be given an additional coat of primer....."

"Galvanized Steel - All galvanized surfaces shall be painted unless painting is specifically excluded elsewhere herein. Surfaces to be painted shall receive one coat of formula 117 and one coat of formula 116. Exterior surfaces shall receive a second coat of formula 116. The specified number of coats of formula 119 shall be used in lieu of formula 116 where vinyl system is specified....."

"Damaged areas of surfaces where repair with zinc spray or heat applied compound is not required, and painting is required, shall receive one coat of formula 117 and one coat of formula 116 or 119 as appropriate, prior to painting the entire area."

*Presented at the 29th Annual Meeting, Lead Industries Association
Chicago, Ill., April 24-25, 1957

Dr. L. L. Carrick

- 2 -

Red Lead Technical Committee

"Praying surfaces of armor exposed to salt water, including butts and seams but excluding areas to be welded, shall be given two coats of primer, formula 116. The outboard side of shell plating in way of armor shall also be given two coats of primer, formula 116....."

The formula numbers mentioned as being required in the foregoing quotes are all red lead paints.

Another contributing factor for the reinstatement of red lead paint as an anticorrosive protective coating is the Navy paint test on three destroyers which were painted partly with red lead paint as recommended by the Red Lead Technical Committee and partly with paint conforming to the Navy specification. The inspection on the first of the destroyers which docked after two years of service indicated the red lead paint to be equal to or better than the specification paint.

The red lead paints designed for use on galvanized iron and reported in Red Lead Technical Letter No. 10 were inspected in January 1957 and the panels have not deteriorated since the release of the Letter. They now have 56 months of exposure. The exposure data to date indicate that the surface preparation for the best service exposure should be (1) age weathered for six months or (2) chemically treated. Additional publicity for the use of red lead in coating galvanized surfaces has been gained through an article appearing in "Factory Management and Maintenance."

The red lead Project No. 23 designed to test the use of the newer types of vehicles in red lead anticorrosive primer paints has been largely expanded to include epoxy resins and water emulsion paints.

The Red Lead Technical Committee continues to cooperate with the Steel Structures Painting Council in the continued study of red lead and lead chromate pigmentations and to serve on its Technical Committee.

The steel bleachers surrounding the University of Michigan athletic stadium bowl which were painted with a red lead and lead chromate pigmentation have now been in use four years. The paint surface is still rated excellent and apparently will last many more years. The previous paint coat lasted only one year.

The committee is interested in all pigments which contain lead. During the past few years a pigment called calcium plumbate has been recommended by foreign paint technologists as an anticorrosive pigment. This paint pigment has been the subject of preliminary evaluation by several members of the Lead Industries Association for a number of years but has shown, in most instances, no characteristics superior to red lead. One potential which is being investigated is its use in a paint system as an intermediate coat over a red lead primer. It seems to have blister resistance, a property which may be useful. This is part of L.I.A. Project 25, which will also include Rustoleum and competitive priced red lead paints.

Other products on the market which are being evaluated are the lead sulfide paints (Blackled) designed for ferrous surfaces. The formulas that we have prepared from the specifications contained in Patent No. 2,609,302 covering

Dr. L. L. Carrick

- 3 -

Red Lead Technical Committee

the preparation of "Blackled" paint do not seem to dry sufficiently hard to offer much abrasion resistance. They remain soft for long periods of time or do not harden at all. We are developing new formulations which show promise of more satisfactory drying. Should the paints prove satisfactory, they should have a place in lead paint systems where other materials are now employed.

The federal superhighway program is just getting under way. The use of red lead on the bridges is being somewhat curtailed by the lack or the slow delivery of steel. Some highway projects have been forced to turn to prestressed concrete members or shapes.

The committee released Red Lead Technical Letter No. 11 dealing with the surface preparation of structural steel and other steel shapes. The type of surface preparation and type of red lead paint recommended for the various environmental exposures are stressed. Technical Letter No. 11 received a distribution of over 11,000 copies to engineers, architects, paint producers and schools. The requests for additional copies are being received five months after its release.

Contacts with Navy paint personnel in Washington, Boston, New York and Philadelphia have been maintained during the year for two purposes, (1) to keep abreast of their current problems and (2) to assist in solving their paint problems by the "lead way."

Since the demand for the Red Lead Technical Letter No. 5 has been such that the supply is exhausted, rather than reissue this Technical Letter, it was decided to supply Technical Letter No. 6 which contains more recent data pertaining to the items which have proved of such interest to the public.

1957

A statistical review of the use of red lead paints by the American Association of State Highway Officials and the individual State Highway Departments has been compiled. It is the intention of the Red Lead Technical Committee to issue in the form of a Red Lead Technical Letter, recommendations pertaining to surface preparation and suitable red lead paint systems, plus recommended white-lead base top coats. The subject of galvanized guard rails is the projected topic of another Technical Letter. It is anticipated that the above Technical Letters will be issued before the close of 1957.

Also, because of the greatly expanded highway construction program, a series of six one-page advertisements on red lead primers is starting with the April issue of "Engineering News-Record." These ads will be directed primarily at the use of red lead primers on steel highway structures and will also advocate their use on structural steel of all kinds since the readership of this magazine includes not only highway engineers but all kinds of structural engineers.

An investigation directed to better wetting of red lead pigments in ready mixed red lead paints and the stabilizing of red lead pastes is now under way.

REPORT OF THE METALLIC LEAD PRODUCTS DIVISION*

G. Howard LeFevre

Vice President, United States Smelting Refining & Mining Co.,
Chairman, Metallic Lead Products Division, L.I.M.

The Secretary and Staff of the Association in their reports will cover, in detail, the work of the Division during the last year. As a background for their reports, the following may be of interest:

The Division held no general meeting since the Annual Meeting in St. Louis on April 24, 1956. The Advisory Committee met in New York on November 23, discussed the work of the Division, and recommended a budget for 1957 not to exceed \$40,000; expenditures for 1956 ran approximately \$32,500. In turn the Industry Development Committee, at its meeting on November 20, acting on the recommendation of the Advisory Committee, recommended to the Directors of the Association that \$35,000 be provided for the work of the Division, and that the Division draw \$4,500 from its reserves for use in 1957; as of December 31, 1956 the Division's reserves stood at approximately \$23,000.

The activities of the Division continued along the regular lines of chemical construction, work with plumbers, sheet metal, and solder. In addition, considerable emphasis was placed on the promotion of lead with architects and builders and the lead building construction bulletins in a new series were issued. In further support of this work with architects and builders the Division had an exhibit at the Home Builders' Annual Convention and Exposition in Chicago on January 20-24, 1957 from which interest apparently developed. The architects for the new dormitory building at Duke University asked assistance in preparing specifications and working drawings for the installation of some 700 feet of 3-pound hard lead gutter linings; the job is now under construction.

Work with the chemical construction industry continued and articles were written for publication in leading chemical magazines with reprints circulated to L.I.M. members, chemical construction companies, and engineering concerns. Three articles were written, appearing first in such magazines as "Chemical Engineering" and "Industrial and Engineering Chemistry." A revision of the chapter on "Lead" in the American Chemical Society's Monograph on Corrosion of Metals was completed early in 1957.

In regard to the work with solder, the Solder Committee of the Division will report to you on the progress of their work immediately following my report.

Work with the plumbing industry continues as in past years both as to specifications and apprentice training, in which work we supply a judge and material to the International Apprenticeship Contest held each year at Purdue University; we also supply a demonstrator for the Instructors' Training Course which is conducted at the same time. The "Plumber's Forum" was circulated twice last year to a list of about 25,000; commencing in 1957 this publication will be

*Presented at the 29th Annual Meeting of the Lead Industries Association, Chicago, Ill., April 24-25, 1957

D. Howard Lofvra

- 2 -

Metallic Lead Products Division

discontinued and certain articles of interest to the trade will appear in the publication "Lead," which publication will be circulated to the more prominent in the plumbing industry. The textbook for plumbers' apprentices "Lead Work For Modern Plumbing," which is sold at cost and which had an initial printing of some 10,000 copies, has had total sales of somewhat better than 7,500 copies; the total cost of printing was approximately \$10,600 of which some \$7,500 has been recovered through sale of the book. Year-end inventory of books in stock showed about 3,000 copies.

In 1957 the Advisory Committee plans to continue the work in all sections of the Division and in support of this work a section in "Sweet's Catalog" will be devoted to lead in the several forms of construction. As has been stated before, the publication "Plumber's Forum" will be discontinued and articles usually appearing in this publication will appear in "Lead." Construction bulletins for architects and plumbers, and bulletins on chemical construction will be issued throughout the year, these in addition to the usual field work of the Division.

REPORT OF THE SOLDER COMMITTEE *

H. Carl Sohl
Research Laboratories
American Smelting and Refining Co.

Approximately five years ago the Brazing and Soldering Committee of the American Welding Society requested that the Lead Industries Association assume responsibility for the preparation of a soldering handbook. A Solder Subcommittee was formed with representation from the major solder producers in the Association. This committee was instructed by the Welding Society to prepare a solder handbook independent of the Welding Society's Brazing and Soldering Committee. However, the result of the Association Committee's efforts was to be reviewed by the full Brazing and Soldering Committee before publication.

Two years ago the Association Committee submitted a fairly complete draft of the proposed handbook. By this time the Brazing Committee had completed and published their handbook and felt that it was the form to which the soldering handbook should conform. As a result, a complete rewriting of all sections that our committee had prepared was then necessary. Almost 75 percent of this rewrite plus additional sections which recent developments in the use of solder made necessary has now been submitted to the full committee of the Welding Society. This work should be essentially complete as far as the Association Committee is concerned within the next couple of months. It is the Committee's hope that this handbook when completed will provide a user with all the basic information he will require to make a satisfactory joint. The types of fluxes, preparation of base metals, methods of heating, and solders are all discussed. Where special techniques are necessary for metals found difficult to solder, details of proper procedure are given particular attention. In addition, new and expanding techniques such as printed circuits have been included as separate chapters.

The Solder Subcommittee has been voted into full membership of the Brazing and Soldering Committee of the American Welding Society. Our major function as members of this committee is to assure fair treatment of the various base metals included in the handbook. This has to be our responsibility since the majority of the members on the full committee are not intimately familiar with soldering. An important result of the efforts of the Association's Solder Subcommittee will be an authoritative handbook which will be published and distributed by a well known and highly reputable technical society.

With the completion of this project, the question naturally arises as to the advisability of continuing this Subcommittee's activities. In this regard, we are all generally familiar with the fact that solder usage is constantly changing and that substitute methods are always being tested. It might be worthwhile for this Subcommittee to investigate soldering operations where substitute materials may be threatening to replace the use of solder in substantial amounts. Recommendations could then be made as to whether improvements of techniques on our products, or a more aggressive sales effort might forestall or discourage the substitution. Some areas of competition which immediately come to mind are the use of plastic sealers in the canning industry, the work on organic body fillers for the automotive trade, the use of wire wrapped joints on electronic equipment to replace soldered

* Presented at the 29th Annual Meeting,
Lead Industries Association,
April 24-25, 1957, Chicago, Ill.

REPORT OF THE SOLDER COMMITTEEH. CARL SCHL

- 2 -

connections, the use of crimped connections on conductors rather than soldering, and the substitution of cable sheathing materials which no longer require wiped solder joints.

Another type of project which the Committee might undertake to the benefit of the Association could be the review of solder flux specification changes proposed by the Government and other societies, to assure that requirements of the specifications are favorable to members of our group. In addition, the Committee might periodically review the status of developments such as aluminum soldering, and ultrasonic soldering, and keep the Association membership abreast of these developments through the Lead Information Bulletin. The above mentioned activities appear suited for committee action as this approach on such projects usually assures a confident and complete appraisal since a broad viewpoint is generally possible.

On the basis of the items listed above in which the members of the Lead Industries Association should be interested, it would seem worthwhile for this committee to continue meeting, at least once a year, and more often, if worthwhile projects should develop.

SUMMARY OF THE REPORT OF THE SECRETARY-TREASURER*

Robert L. Ziegfeld

Since you have already heard reports covering most of our major activities and have received copies of my report in the mail, I'm only going to skip briefly over a few high points here.

Over the last 30 years the per capita consumption of lead in the U. S. has declined roughly 1/2 lb. from slightly over 15 lb. in the last half of the prosperous 1920 decade to a little over 14.5 lb. in the first half of the prosperous 1950 decade. On the basis of present population this represents a loss of over 80,000 tons of lead consumed per year. Since World War II supplies of lead available to U. S. consumers have averaged about 100,000 tons per year in excess of industrial demand, the difference going mainly to Government stockpiling. It appears that if per capita consumption of lead could be raised to the level of the late '20's, supply and demand would strike a close balance.

However, per capita changes in consumption have not been uniform throughout the various uses of lead. White lead, foil and cable sheath for example, have shown major declines but tetraethyl lead, storage batteries, solder and oxides for uses other than batteries, have shown major increases, and nuclear radiation shielding has become an entirely new field. To close the gap between supply and industrial demand obviously requires an approach to the problem over a broad front. Efforts must be made, where possible, to keep the use of lead in the growth industries growing and to increase less important uses and find new ones. It is also probable that those industries which have shown major losses will level off, some because there is little more to lose, like white lead and foil, and some, like cable sheathing, which have already shown a leveling off tendency since the last war and are still sizable consumers.

Recognizing that there is a good possibility of closing the gap between supply and industrial demand, and the variety of products involved, the Association in the last few years has both increased its market development activities and broadened their base to include more products and industries. Today we are promoting lead through a greater variety of sales promotion and research activities than ever before. For example, including both old and new activities, the list of products on which L.I.A. is expending effort and money, would embrace pipe, fittings, sheet, calking lead, the oxides and silicates, white lead, cable sheathing, solder, radiation shielding materials, and probably many others either directly or indirectly. There are still many more opportunities and the industry can never afford to become complacent. There is always the possibility that some day an industry using substantial amounts of lead now may follow the path of white lead and foil.

In 1956 we distributed over 350,000 pieces of literature ranging from our external house organ "LEAD," now published quarterly instead of semi-annually, to red lead technical letters, plumbing text books, building construction bulletins and our ceramic manual. This broad direct mail program is resulting in an unprecedented number of inquiries for literature and requests for help in specific problems.

In addition many articles were prepared for various trade papers, for text books, encyclopedia, and the like.

"Information Bulletins" were also sent to members about once a month, as in the past, and our usual statistical services continued. Our annual meeting last year was held in St. Louis.

*Presented at the 29th Annual Meeting of the Lead Industries Association, Chicago, Illinois, May 21-25, 1957

Report of Secretary-Treasurer
Summary
Annual Meeting

-2-

Robert L. Ziegfeld

There is no need for me to comment in detail on our Industry Development Committee, Technical Steering Committee and Cable Sheathing Task Group, Ceramics Technical Committee, Red Lead Technical Committee, Metallic Lead Products Division Advisory Committee and Solder Committee, other than to thank the members of those committees for their conscientious and constructive service. They certainly exemplify the breadth and scope of our current activities. I think we can also be proud of our health and safety work and the position of prestige it has established for us in that field. In commenting on receipt of a copy of a report of the childhood lead poisoning studies sponsored by us in Baltimore, the American Standards Association said, "The public-spirited leadership of the L.I.A. in arranging for this study is very gratifying." This feeling is widely shared among health authorities and stands our industry in good stead in meeting many of our troublesome health problems.

I want to thank the members for their continued enthusiastic support and the officers and directors for their understanding guidance. I also want to thank the staff and consultants, both here and in New York, for their loyal and intelligent administration of their duties.

Now, I'd like to report for a moment as treasurer of the Association. Our total reserves at the beginning of this year were about \$213,000, up about \$6,000 from the year before. However, over \$91,000 of this was earmarked for the Pension Fund. The Ordinary Fund, including the Health and Safety Fund, had about \$77,000 in reserve. Those are the three funds to which all members now subscribe. Our various promotional funds had reserves of about \$45,000. Starting with this year, only the pig lead producers subscribe to these funds.

In 1956 we received a total of \$165,000 in subscriptions from members, about \$4,000 from interest and sales of publications, and \$8,000 from the Metal Powder Association. The latter is no longer forthcoming. Of the membership subscriptions about \$97,000 was for the Ordinary, Health and Safety and Pension Funds. The other \$68,000 was strictly for promotion and research. I would like to point out that in support of our broader program for promotion and research the funds to be subscribed for that purpose in 1957 will be about \$115,000, an increase of about 70 per cent, subscribed entirely by the lead producers.

It should be noted that in 1956, although total reserves increased moderately, that increase was more than accounted for by the increase in the Pension Fund. All other funds except Industry Development showed declines in reserves. The modest decline in Ordinary Fund reserves was largely the result of unanticipated moving expenses, which will be compensated for by future savings in rent, and the unexpected loss of revenue from M.P.A. The declines in the promotional funds were largely authorized withdrawals from reserves.

Annual Meeting Minutes

Exhibit "G"
April 24-25, 1957

ANNUAL REPORT OF THE
SECRETARY-TREASURER
FOR THE YEAR 1956

For many years the Ordinary expenses of the Association such as rent, overhead and the like, including Health and Safety activities and the Pension Fund, have been financed by all members of the Association under the method outlined in the By-Laws of the Association. Briefly this is on a tonnage basis with lead miners; smelters and refiners; manufacturers of lead products; and makers of cable, batteries and ammunition participating in a ratio of 4-1-2-1 respectively per ton. However, as the Association entered into various industry development activities each development program was financed by whatever method seemed equitable at the time, resulting in each program having a different ratio of participation by the different groups involved and different manufacturers participating in different activities.

About two years ago an Industry Development Fund was established by the producers of pig lead only, to be used strictly for the purpose its name implies. As a result, starting with 1957 all industry development activities are financed solely from this fund and companies which are strictly miners of lead ores or manufacturers of lead products are no longer asked to subscribe to industry development activities. We believe that this has been a distinctly progressive step offering the Association greater flexibility in its operations. Nevertheless, its success will depend upon continued support of the manufacturers of lead products, who are in closest touch with the industries to which we are promoting the use of lead, by giving the Association the valuable benefit of their knowledge of these industries and the assistance of their trained personnel, as they have in the past, in such work as that of the Red Lead Technical Committee, Ceramics Technical Committee, Solder Committee, Cable Committee, Technical Steering Committee, and others.

Over the last 30 years the per capita consumption of lead in the U. S. has declined roughly $\frac{1}{2}$ lb. from slightly over 15 lb. in the last half of the prosperous 1920 decade to a little over 14.5 lb. in the first half of the prosperous 1950 decade. On the basis of present population this represents a loss of over 80,000 tons of lead consumed per year. Since World War II supplies of lead available to U. S. consumers have averaged about 100,000 tons per year in excess of industrial demand, the difference going mainly to Government stockpiling. It appears that if per capita consumption of lead could be raised to the level of the late '20's, supply and demand would strike a close balance.

However, per capita changes in consumption have not been uniform throughout the various uses of lead. White lead, foil and cable sheath for example, have shown major declines but tetraethyl lead, storage batteries, solder and oxides for uses other than batteries, have shown major increases, and nuclear radiation shielding has become an entirely new field on which no data are available. To close the gap between supply and industrial demand obviously requires an approach to the

problem over a broad front. Efforts must be made, where possible, to keep the use of lead in the growth industries growing and to increase less important uses and find new ones. It is also probable that those industries which have shown major losses will level off, some because there is little more to lose, like white lead and foil, and some, like cable sheathing, which have already shown a leveling off tendency since the last war and are still sizable consumers.

Recognizing that there is a good possibility of closing the gap between supply and industrial demand and the variety of products involved, the Association in the last few years has both increased its market development activities and broadened their base to include more products and industries. Today we are promoting lead through a greater variety of sales promotion and research activities than ever before but there are still many more opportunities and the industry can never afford to become complacent. There is always the possibility that some day an industry using substantial amounts of lead now may follow the path of white lead and foil.

Major 1956 activities of the L.I.A. are summarized here and more details will be found in the reports of the various Divisions and Committees presented at the Annual Meeting.

GENERAL

1. In 1956 we circulated over 350,000 pieces of literature.
2. Headquarters were moved to joint space with the American Zinc Institute.
3. A successful annual meeting was held in St. Louis, including a half-day session held jointly with the Zinc Institute.
4. Our magazine LEAD was re-established as a quarterly publication with the mailing list at about 50,000.
5. Annual review articles on lead were written for "Engineering & Mining Journal," "Iron Age," "Steel," the Year Book of the American Bureau of Metal Statistics, and "Industrial & Engineering Chemistry."
6. Chapters on lead were prepared for the encyclopedia Americana and for an economic geography textbook edited by a Dartmouth professor.
7. Statistical services were continued without major change.
8. "Information Bulletins" were sent to members about once a month.

HEALTH AND SAFETY

1. Further progress was made toward substantially increasing the American Standard for maximum acceptable limits for lead in the air of work places.
2. Legislative proposals bearing on lead hazards, including warning labeling, were followed and protested where deemed advisable.
3. Research on childhood lead poisoning has continued and close relations have been maintained with health authorities and pediatricians in principal cities.

-3-

Annual Report
for the Year 1956

4. The paper delivered by Dr. R. T. Johnstone at our annual meeting was distributed among industrial executives, physicians and hygienists. The interest has been amazing.
5. Three Health and Safety Bulletins were mailed to members.
6. The Manufacturing Chemists' Association has been alerted to the adverse implications to industrial chemicals, including lead compounds, inherent in the pharmacy laws of many states.
7. To minimize hardship to members, assistance was rendered to the New Jersey Health Department in preparing forms for the required reporting of lead poisoning.
8. Publications relative to lead hazards have been watched and, where warranted, the attention of authors has been called to unduly adverse statements.

METALLIC LEAD PRODUCTS

1. Our solder Committee is nearing completion of the Soldering Handbook.
2. Two Lead Building Construction Bulletins, a new series, were distributed to some 35,000 architects, builders and plumbers.
3. A judge and demonstrator were supplied for the annual international plumbers' apprenticeship contest and instructor training course.
4. We exhibited at the annual convention of the National Association of Plumbing Contractors.
5. Plumbers' Forum was distributed to about 25,000 plumbers.
6. Over 1,300 more copies of our text book for plumbers' apprentices were sold.
7. The usual field work with plumbers, builders, architects, and city officials was continued.
8. Revision of the chapter on Lead for the American Chemical Society Monograph on Corrosion of Metals was virtually completed.
9. A paper on non-destructive testing of lead was printed in three leading trade journals and reprints circulated to members and the chemical industry.
10. Three Chemical Construction Bulletins were distributed during the year.
11. We delivered the lecture on lead at a symposium on Corrosion Control in Industry sponsored by the National Association of Corrosion Engineers.
12. For the sixth consecutive year two lectures on Lead as an Engineering Material were delivered before graduate students of Newark College of Engineering.

RED LEAD

1. Red Lead Technical Letter No. 11 was prepared and distributed to over 12,000 interested people.

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Annual Report
for the Year 1956

2. The Navy's new specifications make red lead paint mandatory for many purposes where it was optional and, only a short time ago, prohibited.
3. Material was supplied for an article which appeared in "Factory Management and Maintenance" on red lead paints for galvanized surfaces.
4. We continued to support and serve on the technical committee of the Steel Structures Painting Council.
5. The Red Lead Technical Committee met regularly throughout the year and also evaluated results of our test programs as a basis for future promotional activities and outlined new test programs.
6. A survey of state highway specifications was begun to help us take advantage of the huge new federal-aid highway program.

CERAMICS

1. A new technical data book, LEAD IN THE CERAMIC INDUSTRIES, was completed and distributed in early January, 1957, to about 4,500 ceramists.
2. A reassuring address on lead supplies was delivered at the annual meeting of the American Ceramic Society and accepted for publication in the Bulletin of that Society.
3. First steps were taken to outline an advertising campaign in ceramic trade papers to run through 1957.
4. Similarly preliminary arrangements were made for three research fellowships on lead in ceramics as authorized for 1957.

TECHNICAL STEERING COMMITTEE

1. A modest program to gather technical and practical information on lead radiation shielding has been approved for 1957 and a staff member secret "Q" cleared to conduct this work.
2. A foreign and a domestic press manufacturer have been encouraged by the Cable Sheathing Task Group of this Committee to undertake research programs on continuous extrusion of lead alloy cable sheath at no expense to L.I.A., at least at present. Technical assistance is being offered.
3. Work on the American Chemical Society Monograph on Lead, is progressing and many chapters have already been completed.
4. A subcommittee was appointed to entertain bids by independent research organizations for a survey of the industry's research problems.

MEMBERS

No report would be complete without a word of sincere thanks to the membership for its loyal support and to the officers and directors for their help and guidance.

-5-

Annual Report
for the year 1956STAFF

The staff, too, deserves commendation for carrying on vigorously and intelligently, increased activities with fewer people. Of our staff of 11, two have seen more than 25 years of service with L.I.A., two more 20 years, and one is in his 19th year.

I would also like to thank Mr. Kimberley and his staff at the American Zinc Institute for their cooperative attitude in the period of adjustment to living under one roof.

The report of the treasurer for the year 1956 and the current list of members is attached.

Annual Report
for the Year 1956

The Treasurer respectfully submits the report of the audit of the accounts of the Association as of December 31, 1956, by Haskins & Sells, as follows:

.....

HASKINS & SELLS
Certified Public Accountants

67 Broad Street
New York 8

March 26, 1957

ACCOUNTANTS' CERTIFICATE

Lead Industries Association:

We have examined the balance sheet of Lead Industries Association as of December 31, 1956 and the related statement of income, expenses, and reserves for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheet and statement of income, expenses, and reserves present fairly the financial position of the Association at December 31, 1956 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

(Signed) Haskins & Sells

.....

LEAD INDUSTRIES ASSOCIATION

BALANCE SHEET, DECEMBER 31, 1956

ASSETS

CASH:		
Pension Fund savings bank deposits	\$ 91,276.80	
Other (including savings bank deposit, \$3,836.22)	118,567.88	\$209,844.68
ACCOUNTS RECEIVABLE		793.00
ADVANCES FOR TRAVEL EXPENSES		1,975.00
AIR TRAVEL DEPOSIT		425.00
TOTAL		\$213,035.08

RESERVES

RESERVES:		
Employees Retirement and pension plan Fund	\$ 91,276.80	
Ordinary Fund	49,698.36	
Safety and Hygiene Fund	27,194.23	
Metallic Lead Products Division Fund	23,451.70	
Pigments and Chemicals Division Fund (including appropriation for research, \$1,750.00)	6,230.17	
Industry Development Fund	15,742.00	
Ceramic Fund	(78.78)	
Radiation Shielding Fund	(83.00)	
TOTAL		\$213,035.91

() Denotes red figure.

NOTES:

- (1) The cost of furniture, fixtures, and equipment has been written off to expense.
- (2) The employees retirement and pension plan fund reserve is based on an actuarial report and covers both past service and current costs.

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LEAD INDUSTRIES ASSOCIATION
 STATEMENT OF INCOME, EXPENSES, AND RESERVES
 FOR THE YEAR ENDED DECEMBER 31, 1954

	TOTAL	ORDINARY FUND	SAFETY AND HYGIENE FUND	METALLIC LEAD PRODUCTS DIVISION FUND	PIGMENTS AND CHEMICALS DIVISION FUND	INDUSTRY DEVELOPMENT FUND	CERAMIC FUND	RADIATION SHIELDING FUND	EMPLOYEES RETIREMENT AND PENSION PLAN FUND
INCOME:									
Membership assessments.....	\$164,561.91	\$94,675.66		\$ 6,424.25	\$ 4,072.00	\$57,830.00			\$ 9,671.28
Transfers between funds.....		(25,171.29)	\$20,000.00	23,000.00	9,500.00	(52,000.00)	\$15,000.00		2,641.22
Interest on savings bank deposits.....	2,740.27	99.05							
Sales of publications.....	1,177.39	114.69		1,062.70					
Total Income.....	\$168,449.27	\$71,718.12	\$20,000.00	\$20,466.95	\$13,572.00	\$ 5,830.00	\$15,000.00		\$12,312.50
EXPENSES:									
Salaries.....	\$ 80,851.18	\$44,671.23	\$15,405.00	\$10,563.46	\$ 6,811.45		\$ 3,000.00		
Social security taxes.....	1,322.01	776.74	168.10	181.18	174.03				
Rent and light.....	10,294.29	10,294.29							
Office supplies.....	2,754.55	2,375.49	142.73	59.06	185.68		33.59		
Travel.....	13,336.19	4,320.96	1,367.96	5,722.52	1,723.67		172.86		
Association dues.....	714.16	173.41	144.50	267.50	123.75				
Entertainment and luncheons.....	1,675.97	550.79	347.94	720.23	99.51		17.50		
Wartime (net of fees \$1,995.00).....	1,719.83	1,050.07	17.00	440.34	153.98		61.81		
Telephone and telegraph.....	1,714.09	1,359.18	125.68	113.37	67.12		68.78		
Books and subscriptions.....	843.44	328.47	325.70	158.86	53.41		17.00		
Printing - net.....	1,949.28	427.71	342.30	1,082.37	36.90				
Mailing.....	2,445.21	1,532.94	357.64	397.54	156.87				
Moving expense.....	1,379.08	1,379.08							
Cost of publications:									
"Lead".....	10,873.43	8,072.92			2,081.51		719.00		
"Plumbers Lead Forum".....	1,453.53			1,653.53					
"Manual on Ceramics".....	11,089.04						11,089.06		
Building construction bulletin.....	5,979.52			5,978.52					
Red lead technical letters.....	1,794.78				1,794.73				
Conventions and exhibits.....	3,942.62			3,942.62					
Furniture and fixtures.....	1,401.33	1,401.33							
Illustrations.....	694.61	103.84	206.73	735.27	51.27				
Research and research materials.....	1,195.50		195.50		1,000.00				
Consultation fees.....	7,250.00	450.00		250.00	2,350.00		1,700.00	\$ 2,500.00	
Apprenticeship contest.....	436.27			436.27					
Miscellaneous.....	3,224.62	1,694.81	568.83	211.45	54.97		405.56	83.00	
Metal powder Association - for rent, services, etc., to June 30, 1956.....	(8,000.00)	(8,000.00)							
Expenses - net.....	\$167,555.28	\$70,233.29	\$20,170.33	\$19,844.07	\$15,817.68		\$17,285.12	\$ 2,585.00	
EXCESS OF INCOME (EXPENSES) FOR THE YEAR.....	\$ 5,944.09	\$1,484.83	\$ (170.33)	\$1,622.88	\$ (2,245.68)	\$ 5,830.00	\$ (2,285.12)	\$ (2,285.12)	\$12,312.50
RESERVES, JANUARY 1, 1954.....	207,090.99	51,213.52	27,364.56	25,428.92	9,462.85	10,522.00	1,606.34	2,500.00	78,961.90
RESERVES, DECEMBER 31, 1954.....	\$213,035.08	\$49,698.36	\$ 7,194.23	\$27,051.80	\$ 6,217.17	\$15,742.00	\$ (478.78)	\$ (55.00)	\$91,274.40

() Denotes red figure.

April, 1957

MEMBERS OF THE LEAD INDUSTRIES ASSOCIATION

Allied Smelting Corp.	5116 W. Lincoln Ave.	Milwaukee 14, Wis.
Alpha Metals, Inc.	Box 34, Bergen Station	Jersey City 4, N.J.
The American Metal Co., Ltd.	61 Broadway	New York 6, N.Y.
American Smelting & Refining Co.	120 Broadway	New York 5, N.Y.
American Zinc, Lead & Smelting Co.	Paul Brown Bldg.	St. Louis 1, Mo.
The Anaconda Co.	25 Broadway	New York 4, N.Y.
The G.A. Avril Co.,	Langdon Farm Rd. &	
Lead Products Division	Seymour Ave.	Cincinnati 12, Ohio
Bers & Co., Inc.	Ashland & Lewis Sts.	Philadelphia 24, Pa.
* Broken Hill Associated Smelters		
Proprietary Ltd.	Collins House	Melbourne 11, Australia
* Broken Hill South, Ltd.	Box 194-C, G.P.O.	Melbourne, Australia
The Bunker Hill Co.	660 Market St.	San Francisco 4, Cal.
Cambridge Smelting Co.	100 Pacific St.	Cambridge, Mass.
* Cerro de Pasco Sales Corp.	300 Park Ave.	New York 22, N.Y.
* The Consolidated Mining and Smelting	P.O. Box 1030	
Co. of Canada Limited	Place D'Armes	Montreal 1, Canada
Day Mines, Inc.		Wallace, Idaho
Dickson Weatherproof Nail Co.	Box 590	Evanston 4, Ill.
Fixie Lead Co.	P.O. Box 8625	Dallas, Tex.
E.I. duPont de Nemours & Co. Inc.		Wilmington 98, Del.
The Eagle-Picher Co.	American Bldg.	Cincinnati 1, Ohio
The Edlow Lead Co.	P.O. Box 1936	Columbus 16, Ohio
The Electric Storage Battery Co.	Box 8109	Philadelphia 1, Pa.
Ethyl Corp.	100 Park Ave.	New York 17, N.Y.
Euston Lead Co. (The Glidden Co.)	500 Penn Ave.	Scranton 3, Pa.
Evans Lead Division (National Lead Co.)	Box 1467	Charleston 25, West Va.
Federated Metals Division of		
American Smelting & Refining Co.	120 Broadway	New York 5, N.Y.
Aaron Ferer and Sons Co.	101-19 S. 8 St.	Omaha 8, Neb.
* The Firestone Tire & Rubber Co.	Box F, Firestone Pk.	Akron 17, Ohio
The Flegg Lead Co., Inc.	52-01 - 31 Pl.	Long Island City 1, N.Y.
W. P. Fuller & Co.	301 Mission St.	San Francisco 19, Cal.
Gardiner Metal Co.	4820 S. Campbell Ave.	Chicago 32, Ill.
Glaser Lead Co., Inc.	31 Wyckoff Ave.	Brooklyn 27, N.Y.
Goldsmith Bros. Smelting & Refining Co.	111 N. Wabash Ave.	Chicago 2, Ill.

* Associate Member

April, 1957

MEMBERS OF THE LEAD INDUSTRIES ASSOCIATION

Hammond Lead Products, Inc.	5231 Hohman Ave.	Hammond, Ind.
Hecla Mining Co.		Wallace, Idaho
Hudson Smelting & Refining Co.	85-95 Hyatt Ave.	Newark 5, N.J.
Imperial Type Metal Co.	3400 Aramingo Ave.	Philadelphia 34, Pa.
International Smelting & Refining Co. (Anaconda Sales Co., Agents)	25 Broadway	New York 4, N.Y.
Knapp Mills, Inc.	23-15 Borden Ave.	Long Island City 1, N.Y.
Lead Products Co., Inc.	P.O. Box 1341	Houston 1, Tex.
Lucky Friday Silver-Lead Mines Co.		Wallace, Idaho
John R. MacGregor Lead Co.	4520 W. 15 St.	Chicago 23, Ill.
Mike Horse Mining & Milling Co.	620 Power Bldg.	Helena, Mont.
The Murdock Lead Products Co.	P.O. Box 5298	Dallas 2, Tex.
National Lead Co.	111 Broadway	New York 6, N.Y.
New Park Mining Co.		Keetley, Utah
* North Broken Hill, Ltd.	Box 1903-R, G.P.O.	Melbourne, Australia
The Okonite Co.		Passaic, N.J.
Olin Mathieson Chemical Corp.		East Alton, Ill.
Pend Oreille Mines & Metals Co.	Old National Bk. Bldg.	Spokane 8, Wash.
Pennsylvania Smelting & Refining Co.	3100 E. Ontario St.	Philadelphia 34, Pa.
Phelps Dodge Copper Products Corp.	300 Park Ave.	New York 22, N.Y.
Revere Copper & Brass Inc., Foil Div.	196 Diamond St.	Brooklyn 22, N.Y.
River Smelting & Refining Co.	4195 Bradley Rd.	Cleveland 1, Ohio
Rochester Lead Works, Inc.	380 Exchange St.	Rochester 8, N.Y.
St. Joseph Lead Co.	250 Park Ave.	New York 17, N.Y.
Shattuck Denn Mining Corp.	120 Broadway	New York 5, N.Y.
Sipi Metals Corp.	1708-20 Elston Ave.	Chicago 22, Ill.
* Societe Miniere et Metallurgique de Penarroya	12 Place Vendome	Paris 1, France
Sunshine Mining Co.	115 N. Second St.	Yakima, Wash.
United Park City Mines Co.	Continental Bk. Bldg.	Salt Lake City 1, Utah
United States Smelting Refining and Mining Co.	57 William St.	New York 5, N.Y.
The Victory White Metal Co.	6100 Roland Ave.	Cleveland 27, Ohio
Hyman Viener & Sons	5300 Hatcher St.	Richmond 5, Va.
Vulcan Lead Products Co.	1545 W. Pierce St.	Milwaukee 4, Wis.
Western Electric Co. Inc.	195 Broadway	New York 7, N.Y.
Western Lead Products Co.	4530 E. Pacific Way	Los Angeles 22, Cal.
White Metal Rolling & Stamping Corp.	80 Moultrie St.	Brooklyn 22, N.Y.
* The Zinc Corp. Ltd.	Box 384-D, G.P.O.	Melbourne, Australia

* Associate Member