BOARD OF DIRECTORS MEETING

New York, N.Y. December 6, 1950

A meeting of the Board of Directors of the Lead Industries Association was held on Wednesday, December 6, 1950, at 12:30 P.M., at the Bankers Club, New York City.

PRESENT	REPRESENTING
Norman Hickman	American Metal Co. Ltd.
K. C. Brownell	American Smelting & Refining Co.
W. B. Clancy	do
S. D. Strauss	do
Clarence Glass	Anaconda Sales Co.
J. M. Bowlby	The Eagle-Picher Co.
J. A. Costello	Ethyl Corp.
E. L. Newhouse, Jr.	Federated Metals Division American Smelting & Refining Co.
J. P. Ruth	The Glidden Co.
J. A. Martino	National Lead Co.
D. A. Merson	do
Andrew Fletcher	St. Joseph Lead Co.
C. R. Ince	do
F. E. Wormser	do
George Mixter	United States Smelting Refining & Mining Co. Inc.
G. H. LeFevre	do
N. R. Taylor	do

Robert L. Ziegfeld, Secretary-Treasurer

Mr. Felix E. Wormser, chairman of the board, occupied the chair.

The minutes of the previous meeting of April 14, 1950, were approved.

REPORT OF THE TREASURER

The treasurer submitted financial statements covering all divisions of the Association for the period of January 1 to November 30, 1950, which are attached as Exhibit "A."

APPROVAL OF EXECUTIVE COMMITTEE ACTION

The secretary reported that the Metallic Lead Products Division had voted in favor of increasing its annual budget from $25,000 to $45,000 as of July 1, 1950, and to add two more field men to the staff. He informed the Board that he had obtained approval of this increase from the Executive Committee informally, with one member of the Committee approving with reservations. The Board formally approved the action of the Executive Committee, and was informed that to date one additional field man had been added.

1951 BUDGETS

METALLIC LEAD PRODUCTS DIVISION - It was regularly moved, seconded and carried that the budget of this Division be $40,000 in 1951, all of which is to be subscribed during the year. It was stipulated that a third field man, previously contemplated, not be added at this time because of conditions and that the estimated $5,000 balance at the end of 1950 be retained in reserve.

RED LEAD DIVISION - It was regularly moved, seconded and carried that the budget for this Division in 1951 be $23,000, of which $10,000 is to be subscribed and $13,000 drawn from balance on hand at the year-end.

WHITE LEAD DIVISION - The secretary explained that at the previous meeting the Board had approved budgets for both 1950 and 1951, with no money to be subscribed, and that, therefore, no action would be necessary at this time. No action was taken. The previously approved budget for 1951 is $33,500.

EDUCATIONAL SERVICE DIVISION - It was regularly moved, seconded and carried that funds on hand be used to continue servicing paint study cabinets in vocational schools through the same arrangement with Mr. Don Critchfield that had prevailed for the last two years. The secretary explained that the funds would probably last through the first half of 1951 and that soon consideration should be given to the disposal or use of those cabinets after that time had elapsed.

ORDINARY FUND - It was regularly moved, seconded and carried that the Ordinary Fund expenditures for 1951 should not exceed $80,000 and that $100,000 should be subscribed. The secretary was instructed to inform the Metal Powder Association that if it wished to have the Lead Industries Association continue to handle its affairs, it would be necessary to increase the charge for this service by $1,000 a year in view of increased costs. It was also decided to publish "Lead" only twice in 1951 instead of four times, because of market conditions.

SAFETY AND HYGIENE - It was regularly moved, seconded and carried that the Safety and Hygiene budget for 1951 be $20,000 and that $30,000 be subscribed. The action was taken to build up a reserve for certain activities such as research or education that it did not seem advisable to undertake at the moment but that would probably be advisable in the future.

A recapitulation of the approved budgets and subscriptions follows:

1951 BUDGETS

	To Be Subscribed	To Be Drawn From Reserves	Budget
Ordinary Fund	$100,000	-	$80,000
Safety and Hygiene Fund	30,000	-	20,000
Metallic Lead Products Fund	40,000	-	40,000
Red Lead Fund	10,000	$13,000	23,000
White Lead Fund	-	33,500	33,500
Educational Service Fund	-	2,000	2,000
	$180,000	$48,500	$198,500

SALARIES

It was regularly moved, seconded and carried that the secretary's salary be increased to $18,000 annually, and Mr. Bowditch's, director of health and safety to $11,000 annually, and that the secretary give salary increases as merited to others on the staff, the increases to total not more than 10 percent of the total of the remaining salaries, all increases to be effective January 1, 1951.

LEAD CABLE SHEATH SURVEY

The secretary called the Board's attention to the report mailed the Board, and attached as Exhibit "B" on the study the Association had made on the use of lead in cable sheathing. It was generally felt that this market could not be sufficiently influenced by Association action to warrant undertaking any work to promote the use of lead in cable sheath.

MEMBERSHIP

Electric Auto-Lite Co.
North American Smelting Co.

Action on the resignations of the Electric Auto-Lite Co. and the North American Smelting Co., was deferred when the secretary explained that he had requested them to delay a final decision until he had an opportunity to discuss the matter of membership with them in person.

The Okonite Co.

Action was also deferred on the resignation of the Okonite Co., when it was learned that the resignation was instigated by the former purchasing agent who was no longer with the Company. The secretary was instructed to take up the matter of membership with the new purchasing agent, Mr. Gordon.

Kahn Brothers

The resignation of Kahn Brothers was accepted.

Phelps Dodge Corp.

The proposal of the Phelps Dodge Corp., to pay to the Association $1,000 a year starting with 1952, because of its position as an intermittent lead producer in the future, was accepted with the understanding that should the Company's production increase to a point where its subscriptions would normally exceed $1,000, the subscription rate would be subject to readjustment.

Day Mines, Inc.

The secretary reported that Day Mines, Inc., had reconsidered its resignation earlier in the year and had continued its membership.

Silver King Coalition Mines Co.

The secretary explained that the Silver King Coalition Mines Co., had requested a suspension of its subscriptions when it shut down during the early part of 1950. He pointed out that he understood production had been resumed and the Board suggested that he again request subscriptions from the Company in 1951.

I. Cohen & Co. Ltd.

The secretary informed the Board that he had received an inquiry about membership eligibility from I. Cohen & Co. Ltd., secondary lead smelters of Kingston, Ont., Canada, and that he was in doubt as to the eligibility of this concern. It was generally felt that the firm, being a foreign company and not exporting lead or lead products to the United States, was not eligible for membership.

Membership Activities

The question was raised as to the advisability of the Association engaging in activities other than statistics, which would keep the interest of battery, cable and other similar companies so that they would remain members or be attracted to membership. It was suggested that the secretary explore these possibilities and meet with the Executive Committee in the near future to outline a program.

STATISTICS

The question of the possibility of transferring some of the Association's statistical activities to the American Bureau of Metal Statistics was raised and it was agreed that a study of the problem be made and reported to the Board.

ANNUAL MEETINGS

The secretary reported that arrangements had been made to hold the annual meeting of the Association at the Biltmore Hotel, New York City, on May 17-18, 1951 and at the Drake Hotel in Chicago on April 18-19, 1952. He pointed out that the 1951 dates were the Thursday and Friday preceding the American Zinc Institute meeting in St. Louis on Monday and Tuesday, and that the 1952 dates were the Friday and Saturday preceding the American Zinc Institute meeting in St. Louis on the following Monday and Tuesday.

CHANGE OF NAME OF PROMOTIONAL PROGRAM

It was regularly moved, seconded and carried that the name of the General Promotion Fund of the Association be changed to the White Lead Division since these funds were ear-marked for use in the promotion of white lead.

EXHIBITS AT ARCHITECTURAL COLLEGES

The secretary explained a proposal to have industrial exhibits at 15 leading middlewestern and eastern architectural colleges, the exhibits to be rotated among the colleges so that they appear at each college for a period of two weeks during the school year. He stated that he had consulted those among member companies whose judgment he respected in matters of this kind and that since the cost was only $2,250 annually, it was generally felt that such an exhibit displaying lead products used in the architectural field would be worthwhile. He also felt that the cost could be absorbed in the budgets already approved without additional cost to members. The Board approved such an exhibit for the year 1951.

MEMBERSHIP - AMERICAN STANDARDS ASSOCIATION

The secretary reported that he had been solicited by the American Standards Association to have the Lead Industries Association become a member of that Association. It was pointed out that the Board had previously turned down a similar request and that it was felt that the Association could not gain additional benefits by joining. The secretary was, therefore, instructed to decline the request for membership in the American Standards Association.

Meeting adjourned at 2:30 P.M.

Robert L. Ziegler
Secretary

BUDGET DATA

ORDINARY FUND (INCLUDING SAFETY AND HYGIENE)

Approved Budget for 1950:

Ordinary Fund	$71,000	
Safety and Hygiene	31,000	$102,000

Estimated Actual Expenditures, 1950:

Ordinary Fund	$69,000	
Safety and Hygiene	21,000	$90,000

Recommended Budget for 1951:

Ordinary Fund	
Safety and Hygiene	

The Ordinary Fund includes the Safety and Hygiene work of the Association. A report of the latter activities is being sent to all members.

It is felt that the ordinary activities of the Association should continue to be conducted on more or less the current basis, but rising costs may make total expenses somewhat higher. The Association should again receive $6,200 from the Metal Powder Association for conducting its activities.

Expenditures for safety and hygiene work in 1950 were substantially less than the amount approved largely because an appropriation of $6,000 for a study of childhood lead poisoning in Baltimore was not expended. This resulted from the fact that Johns Hopkins University revised its estimates of the cost astronomically to something over $20,000. However, recent talks with the University have devised a satisfactory program for $10,000 per year. It is felt that an additional appropriation of $4,000 should be coupled with the $6,000 already appropriated to initiate the work in 1951.

The work on an antidote for lead poisoning which we have supported jointly with the Research Corporation needs no new appropriation and Dr. Corwin of Johns Hopkins, who conducted the work has submitted a report which is summarized in our report to members.

It is recommended that the Association continue its support of the childhood lead poisoning study at the Children's Hospital, Boston, which we have supported for a number of years. The amount required is $3,000 and would provide for more thorough study of the aftermath of each case. An additional appropriation of $500 is suggested for a study of urinary porphyrins by Dr. Maloof of the Massachusetts Division of Occupational Hygiene.

Because the possibility of lead poisoning or skin irritation has been raised by some potential users as a reason for not employing lead stabilizers in plastics, one member has suggested a study by an independent authority financed by the Association to determine the true facts and dispel fears on the part of users. This is a rapidly growing market for certain lead salts which now accounts for several thousand tons of lead per year. It is estimated that a satisfactory study of the dermatological angle could be made for about $3,500. It may not be necessary to investigate further into the toxicological angle as experts already consulted do not seem to think there is any danger.

These recommended activities would total about $29,000, including our regular safety and hygiene activities other than research or about $2,000 less than what was approved for 1950.

However, we still feel that an educational motion picture on lead poisoning to be shown at medical schools and medical society meetings is badly needed and might in the long run make unnecessary many other expenditures for safety and hygiene work. The cost of such a film should not exceed $35,000 and it is assured the support of and distribution through the American Medical Association. It would also have the support of the U. S. Public Health Service, which is making a series of films on industrial health hazards, one of which will undoubtedly be on lead poisoning eventually. By producing such a film, the Association would obviate the production of a film on this subject by the Public Health Service and would have control over the nature of the film and the material in it.

ORDINARY FUND

Financial Statement

January 1 to October 31, 1950
and Estimated Full Year

	Expenditures Jan. 1 to Oct. 31		Estimated Expenditures Full Year	
Furniture and Equipment	$ 319.21		$ 400	
Salaries	30,693.70		36,000	
Rent and Light	6,001.06		7,200	
Social Security Taxes	786.95		900	
Office Supplies	1,951.65		2,200	
Miscellaneous	1,335.38		1,500	
Travel Expense	4,448.40		5,300	
Association Dues	242.48		300	
Entertainment & Luncheons	438.62		600	
Meetings	2,460.48		2,600	
Telephone & Telegraph	1,174.79		1,400	
Books & Subscriptions	250.38		300	
Printing	365.18		400	
Mailing	2,568.93		3,000	
"Lead"	4,180.10		7,000	
Illustrations	105.92		200	
Metal Powder Association Expense	169.72		—	
Total Expenditures	$57,492.95		$69,300	
Balance, Jan. 1, 1950		$51,578.29		$51,578.29
Receipts from:				
Subscriptions (Full Year)	65,088.25			65,088.25
Less: Outstanding Subscriptions	2,210.25	62,878.00		
Annual Meeting Registration Fees		1,160.00		1,160.00
Metal Powder Association		4,650.00		6,200.00
		$120,266.29		$124,026.54
Less: Expenditures	57,492.95		69,300	
Advances & Deposits	2,875.00	60,367.95	2,775	72,075.00
Cash Balance	Nov. 1, 1950	59,898.34	Est.Jan.1,1951	51,951.54
Reserve for Lead Handbook		4,000.00		4,000.00
Total Balance	Nov. 1, 1950	$63,898.34	Est.Jan.1,1951	$55,951.54

SAFETY AND HYGIENE DIVISION

Financial Statement

January 1 to October 31, 1950

and Estimated Full Year

	Expenditures Jan. 1 to Oct. 31		Estimated Expenditures Full Year	
Salaries	$10,500.00		$12,600	
Social Security Taxes	211.05		240	
Travel Expense	1,536.96		2,000	
Office Supplies	100.97		125	
Mailing	159.51		200	
Telephone & Telegraph	160.07		200	
Books & Subscriptions	204.24		225	
Research	4,496.40		4,500	
Meetings	14.00		50	
Association Dues	46.00		75	
Illustrations	135.78		175	
Entertainment & Luncheons	316.02		425	
Miscellaneous	177.88		225	
Total Expenditures	$18,058.88		$21,040	
Balance, January 1, 1950		$ 3,263.46		$ 3,263.46
Subscriptions (Full Year)		31,000.00		31,000.00
		34,263.46		34,263.46
Less: Expenditures	18,058.88		21,040	
Advances	300.00	18,358.88	300	21,340.00
Balance	Nov. 1, 1950	15,904.58	Est. Jan. 1,1951	12,923.46
Reserve for printing and mailing of Proceedings	3,500.00		3,500	
Less: Net printing and mailing costs	3,059.37	440.63	3,030	470.00
Total Balance	Nov. 1,1950	$16,345.21	Est. Jan. 1,1951	$13,393.46

BUDGET DATA

METALLIC LEAD PRODUCTS DIVISION

Approved Budget, first half of 1950		$12,500
second half of 1950		22,500
		35,000
Estimated Actual Expenditures, 1950		$30,000
Recommended Budget, 1951		$45,000
To be subscribed:		
By Mining Companies	$13,333	
By Manufacturing Companies	26,667	$40,000

A detailed report of this Division's 1950 activities was sent to all members of the Division on October 23, 1950. It was accompanied by a recommendation of the Division's Advisory Committee that the work be continued throughout 1951 on the same basis as in the last half of 1950 within the limits of funds available.

A letter ballot taken on this recommendation revealed no opposition to the Advisory Committee's recommendation, except that one member suggested, in view of current metal shortages, that the plumbing field staff be limited to two men for the time being instead of three, as contemplated when the Budget was last approved.

It is estimated that this Division will have a balance on hand at the beginning of 1951 of approximately $5,000. This amount could be used in 1951 to reduce the rate of subscriptions, which would be further reduced by the larger volume of business on which rates would be based.

The work embraces the promotion of lead primarily in the plumbing, water works and chemical construction fields.

METALLIC LEAD PRODUCTS DIVISION

Financial Statement

January 1 to October 31, 1950

and Estimated Full Year

			Expenditures Jan. 1 to Oct. 31	Estimated Expenditures Full Year
Salaries			$ 7,604.15	$10,000
Social Security Taxes			199.55	250
Travel Expense			4,956.78	6,500
"Plumbers' Forum"			2,622.61	4,500
Other Printing			928.78	4,000
Illustrations & Drawings			604.56	700
Mailing			129.49	500
Convention & Exhibits			945.87	1,700
Meetings			582.87	650
Association Dues			248.50	300
Entertainment & Luncheons			386.96	550
Telephone & Telegraph			88.92	125
Books & Subscriptions			58.17	75
Miscellaneous			259.70	275
Total Expenditures			$19,616.91	$30,125
Balance, Jan. 1, 1950			5.42	5.42
Transfer from Sheet Lead Fund			3,002.00	3,002.00
Subscriptions (Full Year)		$32,671.00		32,671.00
Less: Outstanding subscriptions		478.75	32,192.25	
			35,199.67	35,678.42
Less: Expenditures		19,616.91		
Advances		650.00	20,266.91	30,775.00
Balance	Nov. 1, 1950		$14,932.76	Est. Jan. 1 1951 $ 4,903.42

BUDGET DATA

RED LEAD DIVISION

Approved Budget for 1950		$23,000
Estimated Actual Expenditures, 1950		18,000
Recommended Budget for 1951		23,000
To be Subscribed, 1951:		
By Mining Companies	$5,000	
By Manufacturing Companies	5,000	10,000

A proposed program for this Division for 1951, which had been approved by the Red Lead Technical Committee, together with a detailed report of 1950 activities, was circulated to all members of the Division on November 15, 1950. This was accompanied by a letter ballot on the recommended 1951 program, which has revealed no opposition to it.

The proposed program provides for continued extensive publicity for the results of research carried out in previous years and work now in progress. It contemplates only a small amount of new research -- enough to provide material for a sustained sales promotion effort in the future.

The proposed budget is the same as that approved for 1950. However, since there will be a large carryover of funds at the year end, as explained in the detailed report sent to members, it would be necessary to subscribe a somewhat smaller amount of money than in 1950. This, together with the larger volume of business, should materially reduce tonnage subscription rates.

RED LEAD DIVISION

Financial Statement

January 1 to October 31, 1950

and Estimated Full Year

		Expenditures Jan. 1 to Oct. 31		Estimated Expenditures Full Year
Consulting Fees		$ 240.00		$ 320.00
Salaries		7,113.40		8,540.00
Social Security Taxes		199.28		225.00
Travel Expense		2,521.35		3,000.00
Telephone and Telegraph		156.89		200.00
Meetings		353.03		500.00
Entertainment and Luncheons		256.76		350.00
Printing		863.84		2,200.00
Illustrations		143.91		175.00
Research Material		187.61		200.00
Books and Subscriptions		81.52		100.00
Association Dues		54.50		75.00
Mailing		740.65		1,300.00
Office Supplies		178.55		300.00
Miscellaneous		257.60		300.00
Total Expenditures		$13,348.89		$17,785.00
Balance, Jan. 1, 1950		5,663.83		5,663.83
Transfer from White Lead Research Fund	$10,024.00		$10,024.00	
Less: Credit to be applied	9,980.00	44.00	9,980.00	44.00
Subscriptions	21,027.75			21,027.75
Less: Outstanding Subscriptions	118.50	20,909.25		
		26,617.08		26,735.58
Less: Expenditures	13,348.89		17,785.00	
Advance	400.00	13,748.89	400.00	18,185.00
Cash Balance	Nov. 1, 1950	12,868.19	Est. Jan. 1, 1951	8,550.58
Reserve for Printing		4,071.60		4,071.60
Reserve for Mailing		800.00		800.00
Total Balance	Nov. 1, 1	17,739.79	Est. Jan. 1, 1951	$13,422.18

BUDGET DATA

White Lead Division

(Formerly General Promotion Fund)

Approved Budget for 1950 (last 6 months)	$22,000
Estimated Actual Expenditures, 1950 (last 6 months)	9,000
Recommended Budget for 1951	33,500
To be subscribed, 1951	None

In April, 1950, the White Lead Division approved a promotional program for white lead pigments in house paints to run at least through the year 1951. This program and budget for the last half of 1950 and the year 1951 was also approved by the Board of Directors in April.

The program was started in mid-year but because all of its phases could not be gotten under way immediately, actual expenditures in 1950 were considerably less than approved. Because the program and budget has already been approved for 1951, it is proposed to proceed on the approved basis and no action by the Board seems necessary at this time. It is hoped that all phases of the program will be in operation soon.

WHITE LEAD DIVISION
(Formerly General Promotion Fund)

Financial Statement

January 1 to October 31, 1950
and Estimated Full Year

		Expenditures Jan. 1 to Oct. 31		Estimated Expenditures Full Year
Advertising Fee and Production		$ 2,819.92		$ 3,200
Advertising Space		4,276.98		5,000
Printing		175.00		175
Bank Custody Fee		19.02		35
Travel		66.65		70
Meetings		45.05		100
Telephone & Telegraph		32.56		50
Miscellaneous Expense		245.36		300
Total Expenditures		$ 7,680.54		$ 8,930
Balance, Jan. 1, 1950:				
Obligations of the U. S. Certificates of Indebtedness, 1¼%, due 6/1/50		34,000.00		34,000.00
Savings Note, due 6/1/50		50,000.00		50,000.00
Cash		2,134.39		2,134.39
		86,134.39		86,134.39
Receipts:				
Interest on Government Obligations		2,045.00		2,045.00
		88,179.39		88,179.39
Less: Expenditures		7,680.54		8,930.00
Balance	Nov. 1, 1950	80,498.85	Est. Jan.1,1951	79,249.39
Certificates of Indebtedness, 1¼%, due 6/1/50, reinvested in U. S. Treasury Notes, Series D, 1¼%, due 7/1/51		34,000.00		34,000.00
Cash Savings Accounts:				
Bowery Savings Bank	$4,000.00		$4,000	
Dry Dock Savings Bank	4,000.00		4,000	
Emigrant Industrial Savings Bank	4,000.00		4,000	
Union Dime Savings Bank	4,000.00		4,000	
Interest on Savings Account	19.54	16,019.54	185	16,185.00
Cash		30,479.31		29,064.39
Balance	Nov. 1, 1950	$80,498.85	Est. Jan.1, 1951	$79,249.39

BUDGET DATA

EDUCATIONAL SERVICE DIVISION

Approved Budget for 1950	$4,000
Estimated Actual Expenditures, 1950	1,500
Recommended Budget for 1951	2,000
To be Subscribed, 1951	None

For the past two years the only activity of this Division has been to continue servicing the thousands of paint study cabinets installed in earlier years in vocational schools and elsewhere. This has been done by Mr. Don Critchfield on a service fee basis, using only funds on hand. Because Mr. Critchfield did not engage in this activity during the entire year 1950, our expenses were only about half of what was expected and funds are still available to have Mr. Critchfield carry on the work for another six months. It is recommended that this be done.

EDUCATIONAL SERVICE DIVISION

Financial Statement

January 1 to Oct. 31, 1950

Balance, January 1, 1950		$3,031.98
Sale of Equipment		520.00
		$3,551.98
Less:		
Miscellaneous Expense	$ 16.85	
Service Fee	1,500.00	1,516.85
Balance, Nov. 1, 1950		$2,035.13

Note: No additional expenditures are contemplated for the balance of 1950.

Board of Directors
Meeting Minutes

Exhibit "B"
December 6, 1950

November 3, 1950

LEAD CABLE SHEATH SURVEY

SUMMARY

Through interviews with a number of representative utility companies and cable manufacturers, the Association has attempted to appraise the future of lead cable sheath and to determine whether the lead industry can and should take steps to improve lead's position in this respect. In general, it found that:

1. There has been a definite trend away from lead sheath in low voltage power cable since the early 1930's.

2. There has also been a trend away from lead sheath in very high voltage power cable.

3. In the voltage range from 5,000 to 69,000 v. lead is still used almost exclusively. This voltage range represents the biggest volume of lead used in power cable.

4. Where lead sheath is still used there is a tendency to employ thinner walls with protective synthetic jackets.

5. About 25 to 35 percent of lead used in telephone cable sheath has been displaced by Alpeth sheath.

6. There is apparently universal agreement that lead makes the best and most durable sheath and many utilities are willing to pay a premium for it.

7. The principal reasons for substitution have been cost, shortages, fear for future supplies of lead, and weight.

8. The principal advantages of lead sheath are absolute impermeability, easy jointing, ease of manufacture and durability.

It is concluded that economics will play a large part in the ultimate destiny of lead sheath. It is not likely that the lead industry can influence the use of lead on telephone cable because of the telephone industry's high degree of integration and extensive research facilities. Because there is general agreement that lead sheath on power cable is superior and because some utilities find reason still to use lead for voltage ranges in which other utilities have discontinued it, it might be possible to influence the future trend. Education as to future lead supplies and repeated stressing of the advantages of lead sheath are possibilities.

N 617.02

REASON FOR SURVEY

This survey was undertaken because there has been a definite tendency in recent years to substitute other types of cable sheath for lead sheath. Not only is this trend evident from every day observation of the leadless sheaths that are being installed but also from a study of the statistics. For example in the eight years ending with 1929, cable consumed on the average 18.33 percent of all lead consumed in the United States. In the eight years ending with 1949 this figure had dropped to 13.81 percent. Likewise in 1929 per capita consumption of lead for cable sheath was 3.6 lb.; by 1949 this had dropped to 1.5 lb.

Yet in 1949 this market still accounted for 130,000 tons of lead, which was still the second largest single use of lead. Cable sleeving and solder for jointing lengths of cable should be added to this total but separate statistics on these items are not available. Telephone cable accounts for roughly two-thirds of the total lead, and power cable for one-third.

NATURE OF SURVEY

This survey consisted of personal interviews with 5 manufacturers of cable and 8 utility companies using cable, as follows:

Manufacturers of Cable:

Anaconda Wire & Cable Co., Mr. Dave Allen, Sales Manager,
General Cable Co., Mr. Allan D. Pettee, Vice President,
The Okonite Co., Mr. R. K. Spofford, Purchasing Agent,
Phelps Dodge Copper Products Co., Mr. Edward P. Dunlaevy, Vice Pres.
Western Electric Co., Mr. T. G. Stover, Purchasing Agent.

Utility Companies:

Commonwealth Edison Co., Chicago, Ill., Mr. Herman Halpern, Senior Staff Engineer,
Consolidated Edison Co., New York City, Mr. C. T. Hatcher, Assistant Chief Distribution Engineer,
Houston Lighting & Power Co., Houston, Texas, Mr. T. M. Heiller,
Nashville Electric Service Co., Nashville, Tenn., Mr. Kinzly, Superintendent of Distribution,
Philadelphia Electric Co., Philadelphia, Pa., Mr. Clement S. Schifreen, Senior Engineer,
Public Service Co., of Colorado, Denver, Colo., Mr. Atkinson, Distribution Engineer,
Public Service Co., of New Jersey, Newark, N. J., Mr. J. A. Pulsford, Sponsor, Underground Group of Transmission and Distribution Committee of The Edison Electric Institute.
Union Electric Co., St. Louis, Mo., Mr. Andrew Bodicky, Chief Underground Engineer.

For the purpose of reporting the results of these interviews power cable and telephone cable will be considered separately as the problems involved in each are quite different.

POWER CABLE

For the purpose of this survey it is well to divide power cable into four separate classifications:

(1) low voltage net work cable up to and including 600 volts,
(2) medium voltage cable from 600 up to and including 5,000 volts,
(3) high voltage cable over 5,000 and up to and including 69,000 volts, and
(4) very high voltage cable over 69,000 volts.

In Group 1, substitution has been developing over the last 20 years or so. First rubber and more recently neoprene have been substituted for combinations of rubber and lead and impregnated paper and lead. This substitution was the result of lower cost for the substitutes which have been found largely satisfactory for these low voltages. Some utilities are still using lead sheathed cables in this field for very special reasons, such as New Orleans, where extremely wet conditions are encountered. Others find that lead sheath cable can be more heavily loaded electrically because the greater heat generated may adversely affect rubber and neoprene. It is roughly estimated that this class of cable amounts to about 20 percent of the total volume.

In Group 2, the same type of substitution has been proceeding for some years but here the substitution is not yet as complete. This group accounts for a smaller volume than Group 1.

In Group 3, there has as yet been little or no substitution for impregnated paper insulation and it is still recognized that a lead sheath must be used where impregnated paper is used for insulation. This is because metal provides the only absolutely impervious sheath. It is probably the most important field tonnagewise. It appears that there is likely to be little, if any, substitution until some more economical and effective dielectric is found than paper, or until some metal is found which may be economically substituted for lead. Experiments are being made on aluminum sheath but this metal has not been used commercially as yet. Alpeth, a combination of aluminum and polyethylene has been tried with unsatisfactory results to date because of the effect of the heat generated in the cable on the polyethylene and the tendency of the aluminum joints to open up. Research has produced lead alloy sheaths with improved physical properties which are an aid in retaining lead.

The only loss of lead business in this group would be through a reduction in the thickness of the lead sheath and this is taking place to some extent. Reductions of from 20 to 33 percent in the lead thickness have been tried, the reduced lead sheath being jacketed with neoprene. There are differences of opinion as to the advisability of this reduction. The neoprene supplies additional corrosion

and abrasion resistance but some manufacturers and utilities feel that much reduction in the cable sheath may cause failures where the cable is bent. Some utilities are still insisting on the full lead thickness even though they also use a neoprene jacket for corrosion protection and protection against scoring.

In Group 4 steel pipe, filled with oil or gas under high pressure, is rapidly substituting for lead sheathed cable because of the high oil and gas pressures involved. The trend here will probably be a continued displacement of lead.

From the foregoing it appears that until better insulation than paper, or a better cable sheath than lead is developed, such substitution as will take place in power cable has already very largely taken place. In the low voltage field some utilities still use lead, particularly if the price is not too much higher than the non-lead cable.

TELEPHONE CABLE

The situation with respect to telephone cable is quite clearly outlined in the papers presented by representatives of the Western Electric Co. at the Lead Industries Association Annual Meeting on April 13, 1950.

Briefly it appears that Alpeth sheath has displaced approximately 25 percent of all telephone cable lead requirements and that Alpeth production capacity is being increased to displace about another 10 percent.

Lead is competitive with Alpeth at varying prices depending upon the particular size and type of cable, the price at which lead is competitive varying from as low as 6⅝¢ per lb. to as high as 14¢ per lb.

Western Electric Co. frankly admits that they do not know how long Alpeth sheathed cable will last but their research leads them to believe that it will last a satisfactory length of time. Because there is a possibility of moisture working through the polyethylene jacket and the joints in the aluminum sheath, they are developing a new cable, Stalpeth, which has a corrugated terne coated steel sheath over the aluminum and polyethylene over the steel. The joint in the terne metal is soldered and lead sleeves and wiped solder joints are used for connections. This cable will be a little more expensive than Alpeth so probably lead will be competitive at slightly higher prices than for Alpeth. Shipping of both Alpeth and Stalpeth is considerably less expensive than lead.

Unofficial opinions expressed indicate that there will be a continuing trend towards the Alpeth or Stalpeth sheaths but that lead will also be an important part of the business for a long time to come.

CONCLUSIONS

It does not seem likely that the lead industry can do anything to promote lead for sheathing telephone cable because of the extensive research facilities and the close coordination of all units of the Bell Telephone System. The future trend will probably be determined by economic factors, i.e., the relative cost installed of lead and substitute sheathed cable, and the performance in actual use of the substitutes.

In power cable the outlook may be a little different. Since there are some differences of opinion and practice both among cable makers and users, there is a possibility that a carefully prepared program might change the trend. Several avenues of approach suggest themselves, any one or a combination of which might be tried. They are:

1. Carefully prepared publicity, which might take the form of articles, releases, addresses, etc., to assure the cable and utility industry of continued adequate supplies of lead at a reasonable price for years to come. This might well apply to all users of lead, as the temporary shortages and disproportionately high prices that have occurred at times have spurred users of all lead products in their search for substitutes.

2. Technical advertising and publicity to keep before utility engineers the known virtues of lead sheathed cables such as impermeability, proved longevity, ease of jointing, greater current carrying capacity.

3. Employment of a competent utility engineer to promote lead sheaths by direct contact with operating engineers and to develop additional points in favor of lead sheaths.

If these or other steps are not taken the outlook for lead sheathed power cable appears to be one of gradual decline in use over a long period of time. Much of the displacement, however, has already taken place unless and until insulation better than paper, which requires a metallic sheath, is found, or unless and until some other metal superior to lead is found.

Respectfully submitted,

Secretary.