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LOOKING AHEAD WITH LEAD

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Today, I am not going to dwell on the details of what we on the Association staff have been doing from day to day during the past year. You have already received by mail a rather voluminous accounting of those activities as well as briefer reports at the end of each quarter of the year. Those of you who have had the courage and the tenacity to wade through this stuff should have a pretty good idea of what we are doing and how we are doing it. My hat is off to you.

Today I'd rather look into the future to see what is going to happen, not just now but some years from now, and what we as an industry can and should do to influence that future to our best advantage. You may wonder why, at this stage of my business life I want to talk about the future instead of the past. It is simply because the past has taught me to be intrigued with all the unexpected things that may happen in the future.

If anyone had stood before this group only fifty years ago, well within the life span of many of us here, and predicted that lead-acid storage batteries would eliminate the cranking of automobiles, supply power for all sorts of gadgets and use around 400,000 tons of lead a year, he would probably have been tolerated but considered a little touched.

Only 40 years ago, just a couple of years before the Association was formed, would anyone have believed a public prediction that a new lead additive of only a few droplets in a gallon of gasoline would, in 1964, use over 220,000 tons of lead and occur in almost every gallon of gasoline used? Just as unbelievable then would have been a statement that basic carbonate white lead, the basis of virtually all house paints of the '20's consumed at a rate of 175,000 tons a year, would be only a minor constituent of house paints today. Only twenty years ago, at the end of World War II, how many people would have predicted that the United States would have a fleet of nuclear submarines roaming the seven seas, each submarine shielded against gamma radiation with hundreds of tons of lead?

I only make these comments to prepare you for the crystal ball gazing in which I'd like now to indulge and to help save my face if I am wrong. You have probably noticed, incidentally, that this year my very able staff declined to sit up here with me to back me up. They want to come out of this thing unscathed for the future. But even if I am only partly right, we in the lead industries will have an exciting time looking ahead with lead.

Let's take a look at the workhorse of packaged electric power - the lead-acid storage battery. The big bulk of these is for automobile starting and lighting. What with the technological improvements in them

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that constantly provide more power and longer life at lower cost, I can't for the life of me see any real competition in this application from the many other battery systems that have been known and investigated over the years.

Yet there is a smaller but still substantial consumption of lead for industrial batteries which term, for want of a better one, covers a multitude of sins. This amounts to 40,000 or 50,000 tons a year right now. A big part of this use is for motive power in industrial trucks and personnel carriers. You all know of the intensive program we are conducting to increase this market and the amazing interest we have been able to arouse in the electrical industry in battery power as a huge undeveloped market for electricity. Already three large electric utilities have sponsored four regional demonstrations to promote industrial trucks to their industrial customers. Two more are scheduled by Pacific Gas and Electric and three by Niagara Mohawk Power. Many other promotions are in the planning stage by important utilities. I predict a vastly expanded market for lead in industrial truck batteries alone.

What of personnel carriers? Here a little imagination can conjure up a most intriguing picture. Only a few years ago golf carts were for the old and feeble. Today, fortunately for the lead business, most golfers seem to go along for the ride. Even hand drawn carts for golf clubs are now battery powered and I don't doubt that if we could design a battery powered device to swing the clubs we'd probably sell a lot of them.

This, however, is only a small part of the picture. Small battery powered vehicles of all kinds are the rage for many purposes. Their use for maintenance crews, supervisory personnel and the like has proved both an economy and a convenience. An ad we recently ran in BUSINESS WEEK on one used by Freeport Sulphur has drawn three or four times as many inquiries as any we have run on fork lift trucks. I guess BUSINESS WEEK readers are mostly golfers or lazy. With a few exceptions electric personnel carriers have been made by a number of small manufacturers. Now Allis Chalmers has entered the field with an aggressive sales and advertising program. Have you an electric in your plant?

Let's not stop dreaming yet. I'm sure that most of you have visited resorts covering large areas where electric carts are used to transport employees, guests and luggage. Las Vegas is an example and I was recently at the Ocean Reef Club at North Key Largo, Florida, which is a complex of a couple of inns with rooms at one location, a large group of villas at another, private homes at still another, and various other facilities spread over an area of about 1,000 acres. Here the maids scoot from villa to villa on a fleet of battery powered carts, they are used for the maintenance crews, on the golf course, and many of the more or less permanent residents keep one or two in their garages for private use in skipping to the club bar or the hairdresser.

Have any of you visited the community at Laguna Hills, California, known as Leisure World? It is being built as a recreational living community for some 15,000 or more people over 52 years of age and similar communities are to follow in New Jersey, Maryland and elsewhere. It is laid out with a minimum of streets for conventional automobiles and buses but with groups of electric carts located at various convenient

points to be used for local transportation and feeders to the main traffic arteries.

This brings me to the final stages of this dream. General Electric Company's far out dreamers at Santa Barbara, Calif., have been studying transportation and traffic problems in general with particular relation to electricity. Their study so far was recently reported to a group of people concerned with traffic problems gathered at Stanford Research Institute. What they envision among other things is more or less self-contained living communities in suburban areas of big cities everywhere, such like Leisure World, utilizing specially designed electric vehicles for local transportation and feeders to main traffic arteries. They do not view the electric cart in any way as competition to the conventional automobile because of its recognized limitations of speed, range and power, but as a supplement to it in its own specialized field.

Just one more thing while we're on batteries. Everything is going electric today from tooth brushes and carving knives to lawn mowers and hedge clippers. While other kinds of batteries have so far gotten most of the publicity and market in these devices small sealed lead-acid batteries are finding a place and it doesn't take too much dreaming to picture lead-acid batteries, with their economy and dependability, eventually capturing a big part of this market.

Let's now go from the sublime to the ridiculous. What do you, or I for that matter, know about lead ferrites as permanent magnets? Last year you heard a very learned paper on the subject at this meeting. I'm still in the dark but many people smarter than I have shown a great interest. We did a simple ad based on that paper. A lot of big corporations wanted to know more. Ford started the ball rolling with ferrite motors for their windshield wipers and then for the sequential turning signals on the Thunderbird and Mustang. Now General Motors is in the act with the possibility of making high lead content ferrites for all their small electric motors. This alone could mean 1,000 tons of lead in the form of lead oxide consumed a year. We have just heard an unconfirmed rumor that Ford will change from a low lead-ferrite to one containing ten times as much lead. The potential is a real nightmare if we think of the possibilities on 9,000,000 automobiles a year for motors for windshield wipers, turning signals, windows, seats and so on. Electric sewing machines and hundreds of other applications are potentials being investigated by manufacturers. This is the subject of a lot of our technical service work now.

You think that sounds fantastic? Have you read of Westinghouse's work with ferrite permanent magnets wherein rails and wheels of a mono-rail train are opposing in magnetic force with the result that the train runs on air without actual contact with the track but is guided by it? How much lead oxide will provide the air-cushioned ride on rapid transit from Manhattan to Kennedy Airport or the Loop to O'Hare or, let's really go far out, from Boston to Washington?

I wouldn't be so foolhardy as to predict that we will soon have a network of trains all over the country running on lead but I do believe that ceramic permanent magnets will become important consumers of lead before too long.

In an entirely different field and one that is extremely controversial and dangerous to discuss lead appears to be the gainer however the controversy comes out. That is in architecture. The stark box-like lines and gleaming facades of many modern buildings have their champions and their detractors, but they are contributing to a new interest in lead in at least two ways. Colored glass, one of the popular exterior materials for these buildings, is simply ordinary transport glass on the back of which a coating of colored glass has been fired. Both the glass itself and the so-called glass colors which are applied are highly durable and the colors brilliant and permanent. These glass colors are merely glass colored with certain metal oxides and containing lead oxide as a flux to make them easily fusible at relatively low temperatures, just like the fused-on colored labels you see on soft drink bottles.

Never, and growing rapidly in popularity for the same purpose, is porcelain enameled aluminum. This is either sheet or extruded aluminum on the surface of which a glass coating of any desired color has been fused. This glass coating or porcelain enamel also contains a high lead oxide content to obtain ready fusibility below the melting point of aluminum. I won't dwell on this subject because you have already heard from Dean Rubbell, but I'm sure you'll hear much more of this product in the future. Still a third popular facing for these modern buildings is brick glazed in brilliant colors. This glaze, again, contains a high percentage of lead compounds.

So much for the building materials themselves. To relieve these buildings of their rectangular, shiny coldness architects are turning more and more to landscaping which often includes reflecting pools and fountains. More often than not these are over useable areas like garages, shops, storage spaces or other revenue producing areas, even in one recent case a computer room, which must be completely protected from leakage. The most positive protection that can be conveniently installed is a membrane of sheet lead. At first these pools were usually quite moderate in size and installation of the lead offered no real problem. As the beauty of these pools became more popularly recognized architects' ideas became more grandiose on the theory, I guess, that if a three-ounce martini is good a bucket full of martinis would be better. Nevertheless the average size of these sheet lead membranes is constantly growing which offers expansion problems particularly when temperatures vary radically during installation.

We have spent a lot of time working with architects and contractors to solve these problems and we think we have them licked to a point where lead can be satisfactorily installed in almost any sized pool. Pools with at least one dimension of well over 100 ft. are no longer uncommon and one is on the drawing boards at Harrison and Abramovitz that will be over 600 ft. long and require more than 300 tons of 6-lb. antimonial sheet lead. Another planned for Montreal will cover 32,000 sq. ft. requiring 100 tons of lead. We even had an inquiry from the well known architect Yamasaki about a lead membrane waterproofing to line three acres. I won't go so far as to predict that we are going to have to start using gondolas to get around our big cities but I do predict that lead waterproofing membranes will continue to grow as a market.

It has been a matter of quite common knowledge for many years that lead has excellent qualities for preventing the transmission of sound,

but until recently no one had taken the trouble to find out how to utilize these qualities in the most effective and economical way. I think we are now poised on the threshold of a big new market for lead. Some of us have been disappointed at the slow development of this field but we have been going through a period of marshalling knowledge so necessary to build a large and enduring market. Mistakes have been made but each has taught us something. It is a complex market requiring different degrees of performance, different cost criteria and different methods in the many possible different applications. Silencing a jet's cabin is one problem, an office another, a home, a noisy transformer, a polygraph room still others.

So far the biggest potentials seem to be in planum barriers or over-celling liners, where drop ceilings are used, to prevent noise from one room passing through the ceiling, hitting the floor above and bouncing back through the ceiling of the adjoining room. Another is in actual partition panels where panel manufacturers are showing great interest. A third, which is already commercial, is in removable walls for hotels, motels and schools where larger room areas must be broken down on occasion into smaller rooms without noise interference between them.

There are many other more specialized applications. Transformers in quiet residential areas have presented a noise problem. One electric company has developed a special steel and lead enclosure. Still another has gone to the extent of building an attractive dummy house, with only a transformer inside but lights that light up the windows at night and a man to mow the lawn, copiously equipped with sheet lead soundproofing to keep the gay parties of its transformer occupant from annoying the neighbors.

Knowledge gained from research and practical work on design will, in my opinion, eventually find an important, economical place for lead in soundproofing that can be broadly promoted. Accelerating this should be the availability of thin sheet lead at lower cost that has been perfected through research. Even though this market may have been a little slow in developing its full potentialities, I am convinced the future is there for it. The day may well be at hand when people can score, sing in the shower or fight with their spouses in peaceful bliss.

In the allied field of vibration isolation, I need only mention the use of lead-asbestos anti-vibration pads in passing. These have now become almost standard practice in buildings exposed to severe vibration from nearby trains and subways and are cheap insurance against annoyance to building occupants. With the greater use of air rights over railroads and the extensions of subway systems and new subways in many cities that never had them before, this use of lead is bound to grow. In connection with machinery generated vibration the market for lead has only been scratched. It still needs a lot of specialized study.

There is not time to develop all the pipe dreams that I have. The lead industry is blessed that its products can do so many things in so many different ways. Solder is almost as old as the hills but it is being applied in industry today in ways never dreamed of before, employing all the benefits of automatic application and new heating methods, and utilizing to the utmost the variety of forms into which solder can be made.

About a third of all lead is used in the form of chemical compounds. New ones, particularly organics, are being synthesized and tested for

industrial applications all the time. Who can say that there may not be another tetraethyl lead in the crowd or at least another molybdate orange, the market for which has grown from about 2,500 tons right after World War II to almost 10,000 tons per year today. Lead zirconate-titanate piezoelectrics are responsible for sonar, ultrasonic cleaning and scores of other things. Only a couple of seemingly small technical problems seem to stand in the way of a big further growth here. If these are licked -- and the chances are they will be -- ultrasonic home dishwashers, washing machines and other applications utilizing lead zirconate-titanate as the active element could mean a fantastic future potential.

I can't proceed without one more word about lead anti-knock compounds. The demise of this product has often been predicted by advocates of new types of engines and by fanatics on the subject of air pollution, but the fact is that lead alkyls, now in their early forties, have never shown more youthful vitality. New plants to make them are going up all over the world. The public is demanding more and more powerful engines and is getting them with the aid of more and more anti-knock compounds. Engines that can run on lower test fuels are still regarded by most of the automobile industry as little more than curiosities. Every day there is increasing evidence that lead in gasoline is innocuous so far as air pollution is concerned. And the automobile market continues to grow fantastically both here and abroad. The future looks not only secure but rosy.

The L.I.A. is trying to keep a watchful eye on these and many other opportunities for lead. Time-consuming technical contact with many people in many industries is essential. When these things become mass market possibilities, then publicity, advertising and still more technical service are involved. That's what keeps our staff busy. But one of the most important things is to keep our members well informed and for our members to keep us well informed so that we can all work together to our common end -- bigger and better markets for lead and its products.

I have not attempted to cover every possibility or every lead product. Perhaps some of what I have said may seem far-fetched. What I wanted to get across is that the lead industry is not static, that many people with many ideas are interested and working in lead. We can and should look to the past for experience and guidance in developing the future but in looking ahead let's not be bound by the past.

There is one unique phase of our work that has its effect on every lead market and every market for lead that ever will be developed. That is our program to educate industry, government and crackpots alike that, despite the fact that the human system can suffer damage if over exposed to lead, and many other materials for that matter, lead can be used safely if you know how. It is our job not only to show industry how to use lead to derive the greatest benefit from it but also to show how to use it safely. This broad program of factual education can remove many obstacles to the use of lead and unnecessary legislative or regulatory restrictions.

We are finding broader understanding of these facts -- use lead if it makes a better, cheaper or more serviceable product, but understand it so that it is always used safely. Without general acceptance of this truism, all the virtues of lead would be lost to mankind and all the markets for lead would be lost to us.

As for the Association and its staff, you can see from the report I previously circulated that we are active in many, if not all, of the fields I've mentioned here in one way or another. More often than not we are working with other industries or companies outside the lead industry which have a mutual interest that permits us to make our market development dollars go farther. Our own Industry Development Committee, Board of Directors and members have shown great understanding in making it possible for us at least to explore every opportunity to expand lead's markets. And I must commend our staff on their aggressiveness and initiative in pursuing all the possibilities of lead like a kennel of bird dogs.