



AMERICAN INSTITUTE OF MINING,  
METALLURGICAL, AND PETROLEUM ENGINEERS

## ORAL HISTORY PROGRAM

**Ted Lyon:  
A Proud Engineer Walking in Great Footsteps of the Past**

2018

## **PREFACE**

The following oral history is the result of a recorded interview with Mr. Theodore Lyon conducted by Jennifer Emling on May 9, 2018. This interview is part of the Oral History: Theodore Lyon.

## **ABSTRACT**

One of six children, Ted Lyon grew up in Southwest Pennsylvania as the son of an engineer who instilled in him an excellent work ethic and influenced him to become an engineer. Lyon studied at the University of Pittsburgh, one among many in his family to do so, and went on to span his career in the oil, metal, and materials industries. Lyon started his career in petrochemicals at Conoco and transitioned to the bulk metals industry with Hatch Associates. As the Hatch Associates Managing Director of Bulk Metals, Lyon has the responsibility of a third of Hatch's engagement in the commodities business, particularly in mining and metals, around the world. Reflecting on his career, Lyon proclaims his biggest honor is having the opportunity to work in various sectors of the industry and leading diverse, multicultural teams for projects around the world. As Trustee and President of AIST Foundation, Lyon strives to mentor young professionals and encourage professional stimulation from professional organizations like AIME and AIST. Lyon states, "engineering is a lifelong education, and these societies offer the opportunity to continue your education past your formal university education." To Lyon, being an engineer is about innovation, the responsibility to the public good, and designing and building sustainable facilities that progress the human condition.

Readers are asked to bear in mind that they are reading a transcript of the spoken word, rather than written prose. The following transcript has been reviewed, edited, and approved by the narrator.

## TABLE OF CONTENTS

00:00	Introduction
00:44	The Early Years – Southwest Pennsylvania – University of Pittsburgh
03:10	Starting Out in the Petrochemical and Chemicals Industry
04:50	Conoco – Eichleay – Hatch
05:57	The Concern of Working with my Father
08:47	Biggest Technical Challenges
11:33	Very Interesting but Never Got Built
13:21	Honors and Awards – Professional Stimulation from Outside Sources
16:01	Member Society Involvement
19:24	Attracting a New Generations of Talent
22:49	Advice for Young Professionals - Nothing Comes Easy, Study Hard, Work Hard
24:47	What it Means to Me to be a Professional Engineer
26:58	Connecting the Past with the Future
28:30	150th Anniversary of AIME
30:10	The Steel Industry Going Forward
32:15	Future Plans

## **00:00 Introduction**

Emling:

This is AIST Technical Editor, Jennifer Emling, and I'm here at AISTech 2018 in Philadelphia, Pennsylvania on May 9, 2018. I'm here with Hatch Associates Managing Director of Bulk Metals, Ted Lyon. Hi, Ted.

Lyon:

Good morning.

Emling:

Thanks for agreeing to do this with us.

Lyon:

Well, thanks, Jennifer. I'm happy to.

## **00:44 The Early Years – Southwest Pennsylvania – University of Pittsburgh**

Emling:

So, I guess we can start at the beginning. So, tell me a bit about where you grew up and how you became an engineer.

Lyon:

It's a long story; I'll try and keep it short. I grew up in Southwest Pennsylvania, and we're sitting in Southeast Pennsylvania here, and it might as well be the moon because we don't pay attention to the other side of the state. But, I'm one of six kids. My extended family is primarily from Southwest Pennsylvania, and my father was an engineer, not trained formally, but he ended up President of an engineering company in any event. So, myself and my five siblings were kind of pushed in that direction as we grew up. Not all of us followed it, but I have an older brother that's an engineer, myself, a younger brother that's an engineer; so, electrical, mechanical, materials science, we have it all covered. And I have a deep family tree and history in the industries of Southwest Pennsylvania, including the steel industry.

Emling:

Okay, so, I believe you went to the University of Pittsburgh? Why did you choose that school?

Lyon:

Well, a lot of influence from my family, but we have a lot invested in the University of Pittsburgh now, my older brother went there, I went there for undergraduate and graduate school, my wife is from the University of Pittsburgh, my son got his graduate degree from the University of Pittsburgh. I have a younger brother and a younger sister that got their undergraduate degrees from the University of

Pittsburgh. So, I'm not quite sure why we didn't have any more imagination than that, but, it's a good school, it's close to home, and we are all very happy with the education and training we got there.

Emling:

Did you have any professors or anyone that really kind of was a mentor to you during that time?

Lyon:

I did very well in engineering school. I graduated at the top of my class, but I wouldn't say I was one that was very well connected with all of the faculty. I went to class, I paid attention, I studied, and I did well. I think the influences in my career were probably co-workers, supervisors, and leaders I ultimately worked for when I got out in the industry.

### **03:10 Starting Out in the Petrochemical and Chemicals Industry**

Emling:

So, getting into the industry, tell me about your first job in the industry. You started in oil and gas?

Lyon:

Yeah. So that's a little different than a lot of AIST members, but, since AIME has SPE, the Society of Petroleum Engineers, it all fits. I started my career with Conoco, in the chemicals division, and I ended up in Baltimore, Maryland right out of school at a linear alkyl benzene plant, which is a plant that makes biodegradable surfactants – the active ingredient for household items like Tide and Lux and detergents, laundry detergents, dishwashing soaps, that type of thing. Most people wouldn't realize that you start with chlorine, benzene, and normal paraffins to make soap. None of which you'd want to handle by themselves.

So, I started in the petrochemical and chemicals industry, ended up in Louisiana at a big petrochemical complex for Conoco which ultimately became Vista Chemicals and then part of Sasol. We made ethylene, vinyl chloride monomer, normal paraffins, and alcohols, stuff like that. And then ultimately in Aberdeen, Mississippi making polyvinyl chloride resins and compounds. I was mechanical superintendent of a polyvinyl chloride manufacturing facility where we used vinyl chloride monomer which we made in Louisiana and then polymerized it to make PVC, to make things that everybody recognizes like PVC pipe and wiring cable insulation and things like that.

### **04:50 Conoco – Eichleay – Hatch**

Emling:

So, you really had quite a transition from then, from petrochemicals to more the bulk metals industry. Can you tell me a little bit about how that transition went for you?

Lyon:

Sure, it's serendipity in a lot of ways. I spent about 10 years with Conoco. We had our first and only child

in Mississippi, and we chose to move back closer to family about 10 years into my career. I left Conoco and certainly for no other reason than to get closer to family because Conoco was a tremendous training ground, tremendous company, still is today. It's a little different than it was back then, but it's still a very prominent oil company today.

But, we moved back to Pittsburgh, and my father was running an engineering company that was part of a construction company called Eichleay, and so I went to work for Eichleay - was head of the process division to generate business for them in the petrochemical and process chemicals industries in the Pittsburgh region, primarily to do engineering and construction projects.

### **05:57 The Concern of Working with my Father**

Emling:

So, you worked with your dad in this company, do you want to talk a bit about what that was like?

Lyon:

Yeah, in preparation for this I read a little bit about Dick Teets, I read the transcript from Dick Teets' oral history, which Dick Teets is another one of those guys that people will remember for a long time because he had a tremendous impact on the industry in recent modern times. He thought he was going to work for Alcoa because his father worked for Alcoa. And, he had himself all set up for that in life until his dad said 'No, you can't work for Alcoa because I'm a boss here, and I'll be able to influence things I shouldn't, and people will see that the wrong way, you need to go somewhere else.' I think I have that right... "Sorry, Dick, if I misspoke or misinterpreted..."

Well, I was concerned about that when I went to work for the company my father worked for, but he was in a completely different division. So, the only help he gave me is he passed my resume to the owner of the company, and it was up to him whether or not he wanted to talk to me or not. Then, it was up to me whether or not I impressed him enough to go to work for him. So, I never really had any direct reporting relationship with my father. In fact, the side of the business he was in was different.

The influence my father had, he went to Slippery Rock University, and anybody from Southwestern Pennsylvania knows what that is. It was a teacher's college in the early days, and he was a teacher, and he taught physics and math in a high school, Montour High School outside of Pittsburgh, and I still remember this story. He told me his initial salary was \$3,405 a year. And, so, two years into it he went and asked for a raise; they said no, and he quit.

So, he went to work for a small engineering company in Sewickley, PA called Green Engineering and taught himself engineering on the board, and so, as I said earlier, he's not a formally trained engineer, but, he learned it the hard way. And, he ended up President of a division of Eichleay Engineers, formerly the Peter F. Loftus Corporation. There are a lot of landmarks in the Pittsburgh area with his fingerprints on them, and he was involved in institutional and commercial projects, primarily big hospital projects and public infrastructure, that type of thing.

But, he was an engineer's engineer, and he had six kids. Told every one of us if we want to make something out of our lives we have to be an engineer. And three of us listened to that and did it. The other three did different things. They're equally as successful because they had the same influence, but

they chose different career paths. So, he was a big influence on what I ultimately did, and I have absolutely no regrets. I'd argue today he was a little narrow-minded, but he did instill an excellent work ethic in all of us and ensured we got a good education.

### **08:47 Biggest Technical Challenges**

Emling:

Yes, getting more in, like, the technical side of things. So, what are some of the biggest technical challenges that you've experienced in your career?

Lyon:

So, I talked about the first third of my career with Conoco/Vista. The next piece of it was in the construction and engineering business, and, for the last 16 years, I've been working for Hatch Associates, currently as Managing Director of Bulk Metals. I have responsibility for about a third of our metals business globally. It'll be interesting to the AIST folks here, but my responsibility is not only iron and steelmaking but also the aluminum value chain. I can't say that in front of certain people here, but it works for TMS members, which is also part of AIME. So, I've got AIST, SPE and now TMS all covered.

At any rate, I have responsibility for our global business for iron and steel making as well as our light metals business. We provide advisory services, technical advisory, business advisory, project development, technology development, and project execution all over the world. Projects that range from consultant studies to multi-billion-dollar capital investments. Some of our largest projects right now are in the Middle East and China; we do a lot of work in South America, all over North America and, in fact, Russia and the CIS countries also. So, we're truly global. We're involved in commodities businesses globally. We have two other metal business units; one is base metals, nickel, copper, zinc, that type of thing and also a minerals business, iron ore, potash, titanium, titanium dioxide, things like that. So, Hatch is very engaged in the commodities business, particularly in mining and metals, around the world, and I have responsibility for a third of that.

The biggest challenge is being able to bring the best talent in the world to solve our clients' problems. We pride ourselves in that. Our manifesto describes us as entrepreneurs with a technical soul. What we want to be to our clients is the best technical services provider that money can buy and help them achieve their business goals. So those are the challenges I deal with every day. It's not about inventing something in my case; it's about delivering service to our customers in a way that helps them achieve their business goals.

### **11:33 Very Interesting but Never Got Built**

Emling:

So, can you talk about a specific past project that really stood out to you as something that you were very proud of?

Lyon:

Well, I'll talk about one that was very interesting and never got built. I won't say who the client is at this

stage, but it was very interesting from a development point of view, and it was a project where we did a feasibility study to build a greenfield ten million ton a year steelmaking facility in India. It was probably about 15 years ago now and was the first time I got to go to India, which is a tremendously eye-opening experience, both culturally and from a business point of view. It was a very challenging project because, in North America, when we look at projects, typically infrastructure exists, and we get to build plants around existing public and industrial infrastructure --infrastructure that a state or a local government might provide for you. In some places in the world, no infrastructure exists. The first thing you have to concern yourself is where you will get water, where will you get power, where will you get a rail line, where will you get a road, and, before you can even think about the technical aspects of iron and steel making, you have to think about the logistics and the infrastructure necessary to build a big industrial complex. And, a 10 million-ton-a-year steel plant is big in anybody's book. To put that in perspective, there are no 10 million-ton-a-year steel complexes in North America anymore. They're all in Asia or places like India. So, from that point of view, it was a significant challenge just to address the infrastructure needs long before you can address the manufacturing technology and those types of aspects of project development.

### **13:21 Honors and Awards – Professional Stimulation from Outside Sources**

Emling:

I'm going to move on to, did you receive any awards or honors during your career, you want to go into detail about that?

Lyon:

Well, for me, there are awards and honors, I think, that are given publicly, and we can talk about those a little bit. But, for me, the honor I've had is the opportunity to work in the industry across a broad range of things. Over the last 16 years, actually, more than that, going back to my days with Eicheley Corporation, primarily in the metals industry for the last 25 years, and the progressive opportunities. I've got to lead diverse, multicultural teams for the execution of projects around the world is the biggest honor.

Some industry honors have come through associations with organizations like AIME and AIST. And I think for anybody to have a complete career they need a combination of things. They need education, need employment with an employer you like to go to work for every day, and you need professional stimulation from outside sources. AIME and AIST provide that professional stimulation. I've been involved with AIST since long before it was formed, in the Iron & Steel Society days. I was on the Executive Committee and Treasurer for that organization. I was involved in the merger with AISE, and then I served as the first Treasurer of AIST for the first six years. And, now, I'm on the Foundation as a Trustee and President-Elect. I was fortunate enough, also, to be a Trustee of AIME for four years and received an Honorary Membership from AIME, and that means a lot to me.

I'm not sure what people recognize when they hear AIME, but I think of the Founder Societies and UEF [United Engineering Foundation] and New York City, and AIChE, ASME, ASCE, ----- the Founder Societies which were fundamental to the industrial development of the United States -----AIME has a place in history building an organization of like-minded individuals that drove the industrial development of the United States. So, becoming an Honorary Member of AIME is probably the pinnacle of that whole association with AIME and AIST.



## 16:01 Member Society Involvement

Emling:

So, getting into the membership society, how did you first hear about AIME and how did you begin your involvement?

Lyon:

Well, in school I certainly heard about ISS and AIME. But, the first thing, as a mechanical engineer, you do is you join ASME, right? And I was a member of ASME for probably 15 years, and I actually discontinued that, which I feel a little guilty about. But, AIME was another Founder Society, so very important. But, it was so large that it was almost impersonal in a lot of ways.

When I had the opportunity to join both ISS and AISE, it was in the early '90s, and it was because I went to work for a company that valued membership in those organizations and the entire client community that I was dealing with had membership positions in both of those organizations. So, I joined both. I began to attend conferences and ended up with an association with a former Treasurer of ISS who suggested that I might be good at that position. And, so, I interviewed with the Executive Committee, and they selected me. And, 30 years later, here I am.

Emling:

It really seems that having the company support for these professional associations really made a difference for you; so, does Hatch really have a lot of support for your employees joining these sorts of societies like AIME?

Lyon

Absolutely, Hatch, in particular, we're very focused on the quality of employees that we hire, meaning we hire the best and brightest that we can find from everywhere in the world. And, professional associations that allow our employees to expand their technical skills so that we can apply that to our client base is absolutely critical. So, we are very involved in professional societies all over the world. We're very involved in professional societies around the world including AIME and its member societies and equivalent organizations in Canada, South America, Australia, South Africa, etc. Our executives are business executives, but they are the top technical people in their fields in all cases, including our CEO. So, what we bring to our clients is technical expertise. You know, engineering is a lifelong education, and these societies offer the opportunity to continue your education past your formal university education.

I have this saying that "the half-life of a four-year undergraduate degree is about four years." So, if I understand half-lives, if you don't continue to extend yourself, educate yourself, then what you've learned in the past will be of little meaning in the future.

So, we've put a lot of emphasis on people participating in this. We have a good crowd of people here in Philadelphia this week.

## 19:24 Attracting a New Generations of Talent

Emling:

Kind of going into education in general, you're an AIST Foundation Trustee, and have been very active with that. So, in terms of the importance of things like the foundation and attracting new generations of talent, can you go into detail about that?

Lyon:

So, that's a big deal, and I'll address that from my role as a Trustee in the Foundation, and I'm President-Elect - I'll be President next May, I think, for two years. I've been involved in the foundation from the ISS days when we had about 10% of the financial resources that we have today, in fact, probably less than 10%. So, I've seen it grow to where it is today, where we can spend hundreds of thousands of dollars a year in developing young professionals for the industry.

I'll also talk about it in terms of my role at Hatch in attracting the best talent for our organization because they're not mutually exclusive. We participate, and I participate, in the Foundation because I truly believe that attracting the best talent to the industry is key to the sustainability of the industry. I also believe it's not only the obligation of organizations like AIST and AIME, but it's a key obligation of the industry companies to grow and nurture new talent. And, the AIST Foundation does a tremendous job of joining the companies that are involved and have a stake in AIST with the universities that are producing the students that will populate the key leadership and technical jobs in the industry moving forward.

We also participate with our financial resources at Hatch to provide resources to the Foundation because we see that as a great place to hire engineers. We have many AIST scholars in our organization, and we'll continue to. So, I see the money that we give the organization as a tremendous investment, and we're paid back multiple-fold in terms of the quality students that we get in the organization.

The steel industry traditionally, in the last couple of decades, has not had a great reputation with young students. And young students are attracted to new things. And, I think it's a fact that basic industry is very highly automated, it's very technically advanced, and it's fundamental to the quality of life that we have. And, basic industry is going to be with us for a long time.

We get everything we have through two means. We either mine it, or we grow it, and as long as we're digging holes in the earth looking for the things that will allow us to maintain the quality of life that we have, we're going to need engineers with innovative ideas and the best skills to make the best use of those resources.

#### **22:49 Advice for Young Professionals - Nothing Comes Easy, Study Hard, Work Hard**

Emling:

What advice would you have for a young professional that is joining the industry?

Lyon:

That's a good question. I turned 60 last year, and when you turn 60, you think about, your thoughts go

to different things than they did when you were 20, 30, and 40.

Fundamentally, one of my biggest obligations as Managing Director in the Hatch organization is to ensure that we have excellent people coming up through the ranks. One of my primary obligations now is to ensure that we have great leadership, great talent, and the organization is left in better hands than I found it when I got there. So, we strive to find the best people that we can hire, and we maintain great relationships with universities and organizations like AIST to fill the funnel, and then we nurture these people through mentoring programs, through informal mentoring programs and coaching, and making sure that people get the right experiences in their career so that they can combine their technical training with real-world experiences to progress their careers.

So, nothing comes easy, study hard, work hard, strive to get the right experience; find a mentor. Mentorship's a two-way street. I think the young person needs to look for somebody they can learn from. The senior people need to look for the bright up-and-comers and latch onto them. When you get those kinds of connections made, then you build good relationships to grow good people.

So that's a primary responsibility I've had in the last few years of my career.

#### **24:47 What it Means to Me to be a Professional Engineer**

Emling:

To wrap up our discussion, what has made working in your field meaningful to you personally? What's your favorite part of working?

Well, I go back to your first question about how I got involved in engineering. I never really had any other thought as a high school student about what I might want to do other than engineering. I thought about being a fighter pilot for a while, but that didn't work out. So, engineering was the next best thing. And I had a lot of influence from my family.

But, it was easy for me to choose engineering as a path forward, and I truly enjoy what I do every day. Are there frustrations? Sure. Are there issues? Sure. But one of the best things is seeing things get planned, things getting designed, and things getting built, and then products come out of what's being built. And, doing it in an efficient way, responsible way, being innovative, making sure the facilities are safe. Making sure the construction of the facility is done in a safe manner. We do all this for the public good. I'm a professional engineer. By that I mean I'm a licensed engineer in six states. And, the reason why engineers have licensure is the states have an obligation to protect the public, and the licensed engineers, fundamentally, have a responsibility to do things in a way that protects the public.

So, first and foremost, we do this to improve the quality of life for our situation in society. So, I think that's fundamental to being a good engineer. It's about being innovative, about being safe, and about designing and building sustainable facilities that progress the human condition.

Emling:

Very well said.

#### **26:58 Connecting the Past with the Future**

Emling:

Is there anything else that you'd like to talk about or discuss?

Lyon:

Well, I'll just close on a comment I made earlier. I think, for me, AIME, AIST through AIME, is an organization that allows connecting the past with the future. If you just look at the names, I heard just the other day in John Speer's Keith Brimacombe lecture, that, and I didn't know this, Herbert Hoover was the president of AIME in 1920, and he was our President less than a decade later. There's an argument about which job he did better, but I wouldn't hold him accountable for the great depression. But people like Andrew Carnegie, Herbert Hoover, in more recent times, Ken Iverson, these names are bulwarks of the industrial age of the United States, and they all have a common thread back to an organization like AIME. So, I think we shouldn't forget that, because I think those are things people strive to today when they join the organization, to look for the impact they can make on society and on young people coming up through the industry.

### **28:30 150th Anniversary of AIME**

Emling:

So, AIME is going to be celebrating its 150th Anniversary in 2021. I know you're engaged in some of the efforts to celebrate this. Can you tell me a bit more about what you guys have planned?

Lyon:

I'm glad you brought that up. I touched on that earlier about the importance of AIME in the evolution of industry in North America; so, recognizing the 150th Anniversary is critically important. It's an opportunity to, I think, re-establish the importance of the organization and the evolution of the four organizations that were spawned by AIME.

So, in the 150th Anniversary what we hope to do is put AIME squarely in the spotlight again and recognize its importance and contribution to the development of the engineering profession, of the thousands of engineers that are members of the four societies and their contribution to society and the importance of it moving forward. I would expect that there will be another celebration at the bi-centennial 53 years from now, something like that.

So, anyhow, we're very much looking forward to it, and I'm thrilled to be on the planning committee. And, hopefully, we'll make a big impact on all our member societies and others that join the party.

### **30:10 The Steel Industry Going Forward**

So, where do you see the steel industry going forward in the next couple of years?

Lyon:

That's a good question, Jen. I'm heavily invested in the industry, as well as other competing material, so I

get to see steel from a perspective of a material that has to be selected by the ultimate users. And, there will always be a role for steel. There's more steel produced in the world than every other metal combined. It's very diverse in its use from structural steels all the way to the third-generation advanced high strength steels we heard about at the conference this week. And, steel development will continue, and its uses will become more diverse.

I think sometimes we are our own worst enemy in the steel industry, in that we don't promote steel's value and its diversity. In fact, using the word steel to describe everything from plain Jane structural steel all the way to the advanced high strength steels is probably a disservice to the material, because it's very different from one grade to the next.

So, I see lots of opportunity for steel. You know, we've always heard about aluminum vs. steel in the auto industry; well, I'm involved in aluminum plants and steel plants, so I don't have a dog in that fight. But, I think the materials that provide the physical properties, that green footprint, ultimately, which steel has a very good green footprint, particularly when 65% of the steel produced in the United States is recycled, then I think we have a very bright future in the steel industry. And, the technical developments for advanced grades, that ultra-high strength, light-weighting opportunities is phenomenal, and the progress that's been made just in the last few years has been absolutely phenomenal. So, I think we'll see more of that moving forward, and steel has a very bright future.

### **32:15 Future Plans**

Emling:

You have had a really fascinating life and a really fascinating career. Where do you see the future heading for you?

Lyon:

Well, like I said, I just turned 60, but I don't think in terms of quitting. I just think in terms of transitioning. I'm an engineer, and retirement doesn't mean you're no longer an engineer. I have an MBA from the University of Pittsburgh, also, but I don't consider myself a business guy, I consider myself an engineer, and I'll be an engineer long after I retire.

One thing about the organization I work for, Hatch, is nobody really retires. If you have something to contribute, there's always an opportunity to contribute. Maybe I won't work 80 hours a week anymore and travel all over the world like I do, but I'll be a little more selective down the road. But, I'm sure I have four or five good years left in me. I'll do what I'm doing now, and beyond that, I hope to contribute where I can, bring technical talent of a specialized nature, and where I can help young people progress.

I've often heard, "You've made it in the world when you get paid for what you know, not for what you do." And, I hope somewhere out in the future I get paid for what I know, but, at any rate, that's how I see the future.

Emling:

Thank you so much for agreeing to share your story with AIME in their oral history project, and thanks for coming today.

Lyon:

All right, thanks, very much, Jen. It's a pleasure.