ORAL HISTORY PROGRAM

Lee Saperstein: A Dedication to Mining Environment, Health, Safety & Education

2026

PREFACE

The following oral history is the result of recorded interviews with Dr. Lee Saperstein conducted by Steve Gardner on September 22, 2025. This interview is part of the AIME Oral History Program.

ABSTRACT

Dr. Lee Saperstein was born in Inwood, Manhattan, growing up in New York City's public school system. In 1959, just before his senior year at the Bronx High School of Science, he discovered his interest in mining engineering from an article in the *Wall Street Journal*. Upon graduation, he began his academic career at the Montana School of Mines. Dr. Saperstein continued his education as a Rhodes Scholar at Oxford before beginning his decades-long career in academia, first at Penn State, then at the University of Kentucky, and finally at the University of Missouri-Rolla, where he served as dean of the School of Mines and Metallurgy. Dr. Saperstein's career has been defined by his dedication to doing what's right, whether that means improving mining education curriculum to set the next generation up for greater success or going underground to help rewrite the rules for miner safety. Dr. Saperstein worked to modernize the curriculum at Penn State, influenced MSHA to adopt the silica rule for air breathability, and helped strengthen accreditation and professional standards through extensive work with ABET and NIOSH. Despite his own accomplishments, Dr. Saperstein believes that the highlight of his career is seeing his students succeed in the industry.

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00:00:06 Introduction

Gardner:

Good morning. Today is September 22nd, 2025, and we are virtual with Dr. Lee Saperstein in Nantucket, Massachusetts. It is my pleasure and honor to be here to interview Dr. Saperstein, who is dean emeritus of the School of Mines and Metallurgy and Professor Emeritus of Mining Engineering at the University of Missouri-Rolla. He was also chair of the Department of Mining Engineering at the University of Kentucky, where he was my graduate advisor. He was a faculty member in mining engineering at Penn State from 1967 to 1987.

I am Steve Gardner, past president of AIME (the American Institute of Mining, Metallurgical, and Petroleum Engineers) and SME (the Society for Mining, Metallurgy, and Exploration), joining from Lexington, Kentucky, today. This recording is a part of AIME's Oral History Capture Program.

00:00:53 My Childhood In New York City & Introduction to the World of Mines

Well, first, Dr. Saperstein, we've known each other for a good while, and I can safely say you've had a great influence on my career. I know a lot about you, but I want to ask a few questions to get further in-depth.

Tell me a little bit about where you grew up.

Saperstein:

Steve, I'd be happy to do that, but beforehand, I would add: Lexington, Kentucky—my wife, Priscilla, from time to time still asks me, tell me why we left.

Okay, I was born on the island of Manhattan and grew up on the northern tip of Manhattan in a district called Inwood. I'm a product of New York City's public schools, primary school, junior high school, and high school. When I was nine years old, on the eve of the election results in 1952, my mother died. I don't know whether it was precipitated by the fact that her candidate, Adlai Stevenson, lost to General Eisenhower. But from then until my father remarried when I was 14, we were raised by a single parent and a rotation of housekeepers and what today might be called an au pair.

I was admitted to the Bronx High School of Science, where I did better than average, but not superlatively. It was an outstanding school; how many high schools have nine Nobel laureates as graduates? That was my school. We were all little professors there. During my junior year, my father kept asking me, what is it you want to do? As a former academic, I know that's not really the question you want to ask a prospective collegian. Instead, you talk about choice of college or university that might be providing the kind of education to which you're aiming. But he was very specific. What is it you want to do?

In August, just before my senior year began—so that would have been August of 1959—there was an article in the *Wall Street Journal* about mining engineering and mining engineering education. And I looked at my father, and I said, that's it.

I later learned that the article had been planted by a graduate of Montana School of Mines, now

Montana Technological University, named Roger Pierce. Roger was an early entrepreneur. He gobbled up defunct properties in the hope that they would rise again.

Jumping forward quite a while, I was in a mining engineering class when Roger invited us to visit his property in Cobalt, Idaho. I've been underground in Cobalt. Needless to say, from 1962 to today, not much happened in Cobalt, but Roger was prescient. Cobalt is the metal of electric vehicles, their batteries, and so forth. And I think Cobalt, Idaho, is back in play. Roger doesn't have a piece of that.

So, coming back to the fall of 1959, I'm a graduate of the class of 1960. I applied to only one school. I examined two or three, including the mining school in my hometown. New York City is not necessarily a town, but Columbia University had an active mining program in those days.

We know some people in common who graduated from Columbia. Steve, Ta Li is a Columbia graduate, and a predecessor of Steve as president of SME.

But when it came down to it, I chose one for both price and, oddly enough, affiliation. If I wanted to be a mining engineer, I was going to go to a place that called itself 'School of Mines.' I applied to Montana School of Mines. I was admitted. My high school classmates were not necessarily as readily accepted as I was. But they didn't know that Montana School of Mines was an open-enrollment school. They admitted everybody who applied if we had the requisite number of high school subjects. It turns out that out-of-state tuition was $300 a semester; in-state was free. But if one maintained an admirable record, that is to say, stayed on the honor roll, even out-of-state was free. The only limitation on being out of state was that I was so young they wouldn't let me live off campus. I had four years in the residence halls because I wasn't 21 until I graduated.

It began from there. In 1962, I joined the local student affiliate of what was then AIME, the Anderson Carlisle Society at Montana School of Mines, and eventually became an officer there. And Steve, that's my early history in a nutshell. Any further exploration's up to you. Ask away.

00:07:07 Family, Early Aspirations, and Influential Statistics

Gardner:

Very good. We have covered a lot in that and covered a lot of the questions that I've already scratched off my list. So, what did your parents do in New York City?

Saperstein:

My mother was a teacher of English at Roosevelt High School in Yonkers, New York. The illness that killed her took away her vitality for over a year. I do remember, in late 1948, going down to a dealership on 125th Street and buying a brand-new Plymouth. I didn't buy a brand-new Plymouth; I was six years old. But my parents did, and my mother was the driver. She was the one who drove up to Yonkers to teach. That only lasted for a couple of years. Eventually, that became my father's car. He was a dealer in imported specialty metals and had a strong connection with a supplier in West Germany.

Gardner:

So, there was an early connection with your father in mining.

Saperstein:

Yes, he joined an affiliate of ours, the American Society for Metals, because they didn't have an educational requirement. He was always anxious to improve himself, but never got a degree beyond high school.

Gardner:

You had shared the article that influenced you, and I've read that article, and there were many observations that I took from that article: how things were in 1959 and how little they've changed to today. I think that article said there were only 200 graduating mining engineers then, which did not replace the need for more, and I think the latest statistics I've heard is we only have 400 mining engineers graduating from our accredited colleges today.

Saperstein:

With about two-thirds of the count of schools. When I first went to Penn State, we had as many as four competitors. The University of Pittsburgh is understood as a competitor, but it was not understood that Lafayette (College) and two other universities in Eastern Pennsylvania had mining programs. They're all gone.

Gardner:

I think today we only have 14 accredited programs with maybe a couple more coming online, but some of those 14 are in trouble. And you spent a lot of your career helping accredit those programs.

Saperstein:

I am a colleague, that is to say, a fellow alumnus of Heather Wilson. Who is Heather? She's president of the University of Texas in El Paso, and that's one of the rising programs. And I had to remind her that before it was UTEP, it was Texas Western. Before it was Texas Western, it was Texas School of Mines.

Gardner:

So, reviving a program there. We look forward to that.

00:10:52 Over and Underground – Summer Jobs & Stories from the Mines

Gardner:

Well, while you were at Montana, did you take any internships?

Saperstein:

That's, in my mind, a sensitive question, and yours not. Remember, I was underage as far as going underground. So, my first summer, I worked at a place called the Engineering Societies Library at 29 West 39th Street in New York. And from the back end of the library in the stacks, there was a window

overlooking Bryant Park, which is well known today as a very popular park and entertainment venue on 42nd Street. Twenty-Nine West 39th Street was formerly the Mechanics Institute, and it was the predecessor to the United Engineering Center. I was there when the Founder Societies—of which AIME is one, the electricals, the civils, the mechanicals, and the chemicals are the other four—decided they had to build a new headquarters at 345 East 47th Street. So, part of our job then was to label each shelf in the stacks for the specialty movers.

What they did was they took one shelf, grabbed all the books, and put them into a box that just fit a shelf, and then stuck a label on that box so that they could then be picked up and put into the new space in 345 East 47th Street, which we also helped to do.

You ask me if that was an internship; that was a summer job. It was a buck, a buck and a quarter an hour. But I sure learned a lot about technical journals. Every society had three journals. Transactions, which we now have as the *Journal of Mining, Metallurgy, and Process*.

And then we had a Proceedings, which was the popular technical, and then something called a journal, which was the newscast. The only successor to that is our colleagues in petroleum, who have the journal, the *Journal of Petroleum Technology,* as their house organ.

Okay. I could go on, but I think there are other things.

In my sophomore year—I'm answering your question. In my sophomore year, I was now old enough to work underground. The Anaconda Company, which was the dominant company in Butte, Montana, didn't give scholarships; they gave jobs. And all of my colleagues in mining were working underground. I applied, and they said, kid, you need glasses, you're not eligible. Several months later, they decided that they would require protective glasses, safety glasses for every worker underground, and provided vision tests for those who might need them. And lo and behold, I got a pair of safety glasses and a job. And I worked for the next—I think it began in my junior year—for two years underground at the Steward Mine on North Main Street in Butte, and I learned how to muck ditch. Actually, my first mining job was at the Galena Mine in the summer of ‘62. Lay track, muck ditch, and assist the miners who were known as gypos.

The word “gyp” comes from “Egyptian,” and it's not necessarily a handsome or complimentary word, but they were gypos, and I was the timber pimp supplying them with anything they needed while they were drilling out a round a day. So, when I went back to Butte for school, I worked a shift every Saturday night.

When the underground shift was from six to two, you had to be in place by six p.m. The staff in our residence hall, which is where we ate—Montana Tech now has separate and very extensive dining options. But we ate in the basement of the residence hall. They packed our buckets. I still have my bucket. I learned very early on that an inexpensive thermos with a glass liner would break if you dropped it. So, I then bought a more expensive stainless-steel thermos. I still have that bucket. The plastic handle broke, and I wound a bit of twine around it to take it underground. A bit of twine worked well because you could hang it from a nail.

Two sandwiches, a boiled egg, an orange, and a piece of cake. Ate it all. At lunchtime, we would lay out a board lagging, and we'd sit and eat our lunch. As one miner said, looking up, yeah, that roof's good. You can sleep under it.

Okay. Just one more tale. Two more.

They were referring as they barred down the roof to a Dugan. I knew that many of the miners had heritage from the old world. Some were Cornish, some were Welsh, some were Irish, and many were from the middle part of Europe, the Bohemian part. Dugan. Where did that come from? It turns out that it was a phrase for that boulder up there is one for Larry Dugan, who was the local undertaker. And so, if a rock was dangerous enough to kill you, it was a Dugan.

I learned a lot about the old way to mine. I learned about timber sets. I even worked one night in a square set stope and worked with the miner to cut tenons into the timbers. Those timbers were big, 12x12s. It took two people all they could do to lift them. It was interesting. When I came to teach, I had to go back and remind myself about cut-and-fill stopes, undercut, overcut, and eventually surface mining. But we'll get to that with the next question.

00:18:23 The Greatest Influence in My Life – Why I Left Montana for England

Gardner:

Yes. Well, let's stay on your academic career there. What professors there at Montana would have influenced you the most?

Saperstein:

It's going to be an odd answer, but William W. Chance was professor of humanities and English, and he affected my life the most, and I'll get back to that. The mining faculty member was Professor Bill (William) Vine, who'd been there for a long, long time.

It was rigid. There was one year when he would assign nobody the letter A. He didn't believe in grading on the curve, and we hadn't reached his standards. So, even though I had the best test record, I still got a B. But Bill Van Meter was there, and later Tom Finch, whom we all knew at Montana Tech, and became a good friend.

Dr. Bill Chance. There were several of us who took every class he taught. Classic novels; technical writing was required. And he took a fancy to me and to my writing style. And it was he who asked, had I ever considered applying for the Rhodes Scholarship? Later, I learned that he was the Southwestern Montana representative to the committee of selection in Missoula. And I think he actually saw a chance for him to forward a candidate who might succeed, which is what turned out.

Gardner:

Well, that leads right into that next question [about] your experience as a Rhodes Scholar and your graduate studies in England.

Saperstein:

Yes. And I'll answer that by backing up just a moment to Montana. I love Montana. A piece of me still has Montana. I bought some cowboy gear then, which I still wear now because it protects my rather

cancer-prone skin: Big hat.

When I went to England, I did the same thing. I became as English as I could and still retain my American background. This time it was a Harris Tweed jacket. And I threw myself into my studies. I bought a car. Boy, I drive quite handily on the left-hand side of the road. And I did well. I rapidly joined a graduate program.

In those days, the advice given to Americans going to England was English education is so much better than what you had; you need to do an undergraduate degree. That wasn't necessarily the case for engineering. It might have been the case for languages, social science, history, English. It wasn't the case for engineering. And so, I switched into a graduate program very quickly. And for me, graduate work was entirely by research. My oral exam was a nail-biter because if you failed it, they gave you a master's degree. There was no retaking, but I did pass. And that's my doctorate.

Gardner:

I think you came back with something or someone else from England from your time there.

Saperstein:

You're right. You may not have understood or experienced this—we were treated as undergraduates. Actually, the technical word was “others taking tuition” because we were graduate students; we were not graduates of one of the distinguished universities. Therefore, we were not eligible for a master's degree, which was an honorary degree recognizing that you had an undergraduate degree from Oxford, Cambridge, and a couple of others.

But here we were, 21-22 years old, and our colleagues were 18. And wow, they were smart and super smart and quick to pick on Yanks. You're just colonials. What's more, we were at war in Vietnam, and we were the aggressors. We had to answer a lot of that.

But back to your question, Steve, every so often, one of them would turn to us and say, how do you talk to girls? Because they were 18 and we were 21. And yes, I did have a social life. And I think in my second year, I met a woman named Priscilla Hickson, and we did hit it off and became something of a couple, a partnership. Remember, I had a car. We'd go out to these fabulous countryside pubs and restaurants for a meal. I didn't worry about having half a bottle of wine inside of me because speed patrols in those days were far and few between. And we got along very well.

We were coming back to the United States on board a transatlantic liner when I suggested that it might be a good idea to get married. And so that was on board the SS France in July of 1967. And I might point out, we married relatively shortly thereafter. It's been 58 years, just a week ago.

Gardner:

Fascinating. From Montana to England as a Rhodes Scholar, and then coming back to the US with a new partner in life. Fascinating story. So, what was next?

00:25:02 My Career at Penn State – Modernizing Curriculum and Moving Up

Saperstein:

The dean of the College of Earth and Mineral Sciences at Penn State saw a copy of my application and turned to Dr. Robert Stefanko, another one of your predecessors as president, and said, you need to hire this guy. I'm not sure that Bob Stefanko really liked being told what to do. And I'm not sure that I at any time won his full approval, but I did what I could, and I became an assistant professor. Priscilla lowered her skirt hems because in central Pennsylvania in 1967, miniskirts, no matter how great your legs were, were not necessarily the thing. She is a qualified registered nurse and found a job at Phelps County Community Hospital, which was in the county seat of Bellefonte. And so, she started working there while I was making my way as an assistant professor.

Gardner:

How long were you there at Penn State?

Saperstein:

Almost twenty years. I worked my way up through all of the academic ranks. I tell young faculty members, look, there's only two positions in the university: aspirant and arrived. You're an aspirant if you're an assistant professor looking for tenure, and if you get tenure and are promoted to an associateship, you've arrived. Associates then have to establish further steps in their career to become a professor, sometimes called a full professor, but the rank is one word: “professor.” All of those steps happened to me.

While I was looking at my colleagues, I realized that they were concentrating on underground mining, but that Pennsylvania was rapidly shifting to a surface mining state, and we weren't doing anything about it. So, I was the one who created the first surface mining class at Penn State and then moved on to several other elective subjects that concentrated on things like the environment and writing a permit. How do you get the permission to mine in today's world? I began to understand that the social license, as it's now called, was important because the state was able to control. Originally, in Pennsylvania, a permit was a rubber stamp. You had a mining company and a dragline; you got a permit. It became tougher and tougher. And we spent time both with young students and with older students in our continuing education programs, dealing with the steps needed to get a permit.

I will take a quick tangent here. One of my associates at Penn State was Charles B. Manula, Chuck Manula. He told me once he flew 25 missions—flew—in the Korean War. I think he was the navigator. And he said, I never want to get into another airplane. So, every time we went to an AIME meeting, and then, later, an SME meeting, he went by train. But he was our computer guru. He had a number of graduate students, and each one of whom he had write a subset of his master simulator for both underground mining and surface mining. He had support from a man named Bill Morgan. Bill was Caterpillar's computer person. And when I was talking to Mike Murphy of Caterpillar, about Bill Morgan, his eyes lit up, and he said, people at Caterpillar have no idea what Bill did for them. But the whole MineStar system for Caterpillar began with Bill Morgan getting every good idea he could from Chuck Manula. Chuck is unrecognized. Our colleague, Dr. Raj Ramani, another one of your predecessors, has done what he could to establish recognition for Chuck.

00:29:55 The Rebirth of Mining at the University of Kentucky

Gardner:

From Penn State, you came to Kentucky, where we first met.

Saperstein:

It was a good move. Ray M. Bowen was dean, and when he asked, would I join. I wasn't sure. When it turned out there was a competition for a job at Penn State that I did not get—what's the phrase? What harms you makes you stronger if it doesn't kill you. So, in this case, maybe it was just enough of an ambition; I wasn't ready to quit. I called Ray, and I said, I'm yours. He was a great boss. He was one of the best there was. Ray went on to become a provost at Oklahoma State, and then president of Texas A&M. He had spent some time after Kentucky as head of a major division at the NSF (National Science Foundation).

So, he had a lot of experience with research, both as dean and as a grant manager, before he went to Oklahoma State. I was very fond of Ray and his wife, Sally. I was very supportive. At the same time, remember, we were in a separate building then, Steve, the little mining building that had been recently rehabilitated, and it was between the quadrangle and the president's building. And then construction started on Mines and Mineral Resources. And that was a great move for mining. It still kept us distant from all the other departments. And one of my concerns was statements from my fellow department chairs. Well, you guys in mining, you do it differently. They were disparaging some of our approaches to pay raises, promotions, and so forth. And I said, oh no, we're an engineering department. We just happen to be very good at mining.

Catesby W. Clay, whom you know, at Kentucky River (Coal Co.), established a fund with a million dollars to create an independent funding stream for mining called the Mining Engineering Foundation. And between that and the new building, suddenly, we had rebirth. I would like to take credit for all of it, but I'm adding Catesby Clay; I'm adding Ray Bowen. We spent a great deal with existing faculty upgrading, and we hired some very good people—Joe (Joseph) Sottile, Rick (Richard) Sweigerd, John Yingling—all great research people, and the department has prospered since then. Even through some depressed times, the department has managed to have students and now a bundle of research.

Gardner:

Yes. Well, and I certainly benefited from your presence. I decided to go back and get my master's degree at that time, working full-time and then taking classes part-time.

Saperstein:

Not an easy row to hoe.

Gardner:

And I appreciated all you did for me. I had an assistantship for a while. I remember when the department moved into the new building, I had a graduate student's desk in the back hallway, and I would come there to do my studying and then go back to the office and work. And I'm still on the Mining Foundation Board.

Saperstein:

Great.

Gardner:

In fact, now I'm heading the fundraising committee, which we're trying to raise additional funding for the department. And then also, some influence is my youngest daughter ended up going through mining engineering at Kentucky.

Saperstein:

And a person whom I consider your personal assistant, Karen Wallace-Rose, was an alumna of the department.

Gardner:

Yes, I hired her while she was a student, and she worked for me for 25+ years until I sold the company, and she's still working for the company that bought us out.

00:34:53 Memories of the School of Mines and Metallurgy & Gifted Colleagues

Gardner:

So, we hated to see you leave Kentucky, but you moved on from there to another position.

Saperstein:

I became dean of the School of Mines and Metallurgy, SOMM, at the University of Missouri-Rolla. And just as an aside, I've had people tell me it was the Rolla School of Mines or it was the Missouri School of Mines. Up until 1964, it was a division of the University of Missouri at Columbia. And that's why it was called a school, because it was one of the many schools with a director. In ’65, the university system created the University of Missouri-Rolla, thinking, hey, a naming convention like that, if it works for California, it's got to work for Missouri. Because to this day, it's still Berkeley. But there were several steps between there and here when it got renamed as Missouri University of Science and Technology, which I still keep as my email address. As an emeritus faculty member, one of the benefits is I get to keep my email address. So, I'm mst.edu.

Gardner:

Yes.

Saperstein:

The programs in the School of Mines and Metallurgy began to do very well. They also became unbalanced in how well they did. Ceramics and metallurgical engineering were gaining a great deal of support. Mining was doing well with students, but not with research, and the same for petroleum and geological engineering.

We were a combined program in that geology was a science, not an engineering. Geological engineering was the companion as an engineering degree. Good colleagues, good programs, and Samuel Frimpong came to mining engineering under the guidance of Larry Grayson, who was then chair of mining. He came from the University of Alberta, where he'd done a lot of work in the surface mining of tar sands. Alberta is a major fossil fuel producer, but the tar sands are refined to make crude oil rather than a solid fuel, and Samuel brought one or two of his students.

Kwame Awuah Offei is one of the brightest people I know. He was originally from Ghana. He has done outstanding things for the society. He was the society intern with the Securities and Exchange Commission when they were rewriting the rules for professional expertise, a copy of the Canadian National Instrument, NIA 101. And so, the SEC rules were very much a part of Kwame. He came back as a faculty member, took over such courses as I was teaching in surface mining and the environment, and he's now chair of a combined department of mining and petroleum engineering. And I told him that one of my classmates in high school was a man named Kwame Ture. It was the name he adopted for himself.

My fellow student was a happy-go-lucky high school student, but at Howard University, he became a very strong supporter of African American, Black political things and created the Student Nonviolent Coordinating Committee, so-called SNCC. So, I told him that he had adopted the names of two African leaders—Kwame from Ghana and Ture from Senegal, I think. And my colleague, Kwame Awuah Offei, said, Kwame? It means a boy child born on a Saturday. Why would he take that name? I said, I think it was out of respect for the political leader.

Saperstein:

My classmate at Bronx High School of Science was Stokely Carmichael. People my age all knew who Stokely was because he was a major influence in the civil rights movement in the United States of the mid-60s and early 70s. And it was he who adopted the name Kwame Ture. The great South African singer, Miriam Makeba, whom I was able to listen to when I was visiting a relative in California, was singing at one of the San Francisco nightclubs, became his wife—for a while.

And the other thing that I recall is, at Penn State, the dean was a meteorologist, and he decided that our program would host a weather show live every night at 6 p.m.: *State of the Weather, Shape of the World*. So, half of it was managed by a young faculty member, actually a rising faculty member, because Joel N. Myers was still an instructor in those days, and he would do the weather. He'd come bundling into the studio 30 seconds before the camera went live, hand the latest printout of the radar screen—in other words, the screen print—for somebody to paste onto a board, and he'd start. When he was finished, seven or eight minutes later, the guest would take over to talk about the shape of the world. I had a regrettable, tragic moment talking about the fatalities at Farmington No. 9 in the Consol mine, which was the event that caused the Bureau of Mines, actually the Congress, to rewrite the safety rules for mining—the first miner law.

But then I also did some fun things. On live camera, I panned for gold. I bummed a few chips of gold from my colleagues in mineral processing, mixed it with sand, and made it appear in a gold pan. And the interviewer said, that's fabulous. How did you do that? I said, well, you know, if you know what you're doing, it's not hard. I was lucky. I was really very lucky. So, as we depart from *State of the Weather, Shape of the World*, Joel Myers didn't last long as a faculty member. He was making a heck of a lot more money as a forecaster providing accurate forecasts to major urban areas, particularly about what time it

might snow in the wintertime because it was affecting their overtime costs for crews. You may have heard of—I use the word advisedly—accurate weather forecasts. Joel is still the full owner and chairman of the board of AccuWeather. It was an interesting time.

What made me think of it is you and I are getting along very well, but I did learn something about interviews during that time and thereafter. Talk to the person who's speaking to you, not to the camera. Wait for the question; don't presume. It's all fun. Thank you, Steve.

Gardner:

Yes, it is just a conversation, and I'm enjoying learning more about you. I guess we've known each other since you came to Kentucky, which is—

Saperstein:

1987, September.

Gardner:

Decades ago, over 30+ years ago. Even more.

Saperstein:

Just like yesterday.

Gardner:

It is, it is.

00:44:35 How to Keep Miners Awake – My Introduction to Mining Health and Safety

Gardner: [04:42]

So, we talked a little bit about it earlier, your research focus going more towards surface mining, and it certainly influenced me in what I was doing in my graduate studies. But what else have you done in your research and research focus over the decades now?

Saperstein:

When I was at Penn State, I was in charge of some continuing education programs. And those of us in the industry know about MSHA, the Mine Safety and Health Administration, part of the Department of Labor, and their state grants program. It's not huge—five to ten million dollars a year. But those state grants are to pay for training in the mining field, particularly with companies that aren't big enough to have their own training staff. We at Penn State did new miner training and experienced miner training throughout the state, and particularly for the non-metal—the crushed stone, and sand, and gravel, dimension stone industry in Pennsylvania—a major part of which provided material for the cement industry of Northeastern Pennsylvania.

Our instructors would go out into the mine and talk to people—people being employees, miners. When they came back, they said to one of our leaders, you know, I'm telling them the same thing this year I told them last year. How do I keep them awake? Out of which, my colleague Jim Bennett established a research program on assessing the benefit of training. He developed ways for the miners to look at the mine with a new eye and then report back during training class, so it wasn't in any way tale telling on fellow miners to an inspector. But in their class, you know, I don't think you should climb onto a bulldozer that way, because slips and falls from bulldozers were a major source of accidents, and then any number of things, which led to my interest in the health and safety of workers, miners, including the 15 years of consultancy to NIOSH, National Institute of Occupational Safety and Health, on the research needs to improve the health and safety of miners.

The last thing that we were working on was the adoption by MSHA of the silica rule that already prevailed in the other side of the house, which was OSHA, the Occupational Safety and Health Administration, on the amount of silica that could be tolerated in breathable air: 50 micrograms per liter or per deciliter, not sure, but the 50-microgram standard. The last thing we worked on was talking to mining companies about how they might comply. So, health and safety of miners.

Gardner:

And you reminded me of something. It dawned on me earlier this year that I started my first job 50 years ago with Bethlehem Steel's mining operations in eastern Kentucky. And as you recall, I had my bachelor's degree in agricultural engineering—

Saperstein:

I know.

Gardner:

—and was hired.

Saperstein:

I've been to Jenkins, and I've been a guest of the man who hired you.

Gardner:

Yes.

Saperstein:

And I was filled with admiration about how well he ran those mines.

Gardner:

And that was my real—

Saperstein:

I'll let you name him.

Gardner:

Yes, David Zegeer. Toni and I are working on an oral history of Dave Zegeer from some of the recordings that we made of him over the years. But he had a great influence on my career and became a lifelong friend, colleague, and actual business partner in later years. But when I was in Jenkins and Bethlehem, as kind of the odd person out with not a mining background, I was given responsibilities for some of the environmental and reclamation for some of the big surface mines that were going on.

And I now remember well that they sent me to Penn State for a short course in acid mine drainage in either 1975 or ‘76. And we may have met at that point in time. And I'm trying to remember the instructors for that class, but I spent several days there on campus.

Saperstein:

If it was Penn State, it probably was Harold Lovell or a mineral processor. I don't recall doing AMD (acid mine drainage) or CMD for coal mine drainage.

Gardner:

But that was my opportunity to visit Penn State and experience some of the work that was going on there.

00:50:27 The State of Health and Safety in Industry, Then & Now

Gardner:

So, what are your biggest technical challenges that you think you've experienced over your career?

Saperstein:

Steve, on the whole, it's been relatively smooth because I was developing material to help the industry comply. I did not write the Surface Mining Control and Reclamation Act of 1977. I watched it develop. I had a drawer full of drafts going back to the Jackson Report in 1972 or ‘71, and I could see what was coming. I even had a sabbatical in England to learn how they approached the environmental permitting process because England, in those days, still had an active surface mining program for coal.

And you talk about short courses; we teach the short courses. I remember clearly adopting something that we did in the classroom for undergraduates about sizing a dragline. In those days, it was all hand calculations to get bucket size and boom length. Nowadays, you just plug it into the simulator. But I'm rolling through this, and one of the students—remember, not young, an older gent—"doctor, doctor, don't tell me how to size a drag line. I got a drag line. Tell me how to use it better.” And I fell into the Bucyrus-Erie handbook on drag line utilization, which was great. It was very helpful.

Your question was on any technical difficulties?

Gardner:

Yes. Challenges.

Saperstein:

I'm going to slide that one sideways. You and I lived through an entire cycle of technological and regulatory change.

Mining is still great if you've got a gold mine. And by the way, construction materials- that's a gold mine. But if you have a coal property, you're struggling. So, one of my concerns today, no longer active, is that in cost-cutting, there might be an uptick of accidents and fatalities from small operators who forget the basics of health and safety. That's a concern because we went through this. We learned how to adapt to the mine safety law. We taught people about electrical safety. My colleague, (Lloyd A.) Pete Morley developed a whole line of coursework that Jeff (Jeffrey L.) Kohler, who was his PhD student, took with him when he went to NIOSH to be director of the mine safety and health research activity.

And that's gone. In February of this year, it was closed. I was let go, too. And right now, I don't know what to do about it except to tell you that at some point we have to figure out how to re-galvanize some of the work that protects the health and safety of our colleagues. I have colleagues in the union, and so I want to say loudly to our brothers and sisters who work in the mines that they shouldn't be abandoned. So, to some extent, that has been my challenge. During the time of developing this stuff, I had all kinds of cooperation from the mining companies. We went into the pits, we went underground, we did all sorts of things, always with the cooperation of the miners.

We went underground. How did we pay our way? We handed out hard hat stickers to anybody who helped us. MSHA eventually required a larger coverage of reflective stock on a hard hat. I think most of those giveaway stickers disappeared at that time. But for a long time, you'd go underground, and you'd see a Penn State sticker. It was a triangle because the triangle could fit onto a hard hat without wrinkling. It was made of reflective stock

Gardner:

I think I have a few of those stickers. I've got a collection that I received, plus some I inherited from our colleague, Dave Zegeer.

00:55:45 The Opportunities and Benefits of My Career – The Meaning Behind It All

Gardner:

So, changing gears, I know you've received a lot of honors and awards in your career, but what are the highlights of the things that you've been honored with over time?

Saperstein:

I don't work to be rewarded; I work for the benefit of those who might be helped. So, the health and safety, which we've already talked about, but also the quality of the education that our students receive.

It was, I think, the summer or fall of 1979, and the evaluator appointed by SME to visit a campus called his team chair and said, sorry, I can't come. There's a problem in the mine. I've got to go to that. You and I know who it was, but we don't have to share that with the world. I get a call as a prospective evaluator. Could I go to a mining campus? Sure. I was pretty good at understanding coursework, evaluation, and learning outcomes. So, I went. Unfortunately, the program needed some help. For a year or two, I didn't make any friends on that campus. But that was my beginning as an evaluator for ABET (Accreditation Board for Engineering and Technology).

Today, if I were recruiting somebody to be an evaluator, I'd say, you've got to pass a selection criteria at SME, you've got to go to SME training, you've got to go to ABET training, and then you need to go on at least one observation visit. I got thrown in at the deep end of the pool. I survived, and I survived well enough that I continued to be appointed as an evaluator and very quickly was asked to join ABET's Engineering Accreditation Commission, EAC for short, as a commissioner representing SME in the mining side. I did my five years in that, was selected as an officer, and rose up to become commission chair. During that time, I'd also been involved in the Criteria Committee, helping to write the standards by which we evaluated programs. And when that was all done, SME appointed me to be a member of the ABET Board of Directors. And again, I worked my way up. I was president of ABET in 1999. Because it was for the academic year, I like to say I was the millennial president because it extended into 2000.

And the benefit. Yeah, I got some awards from that—Grinter Award and Fellow of ABET. But the real issue is to look at student work, see student presentations, and know that these people are going to be good engineers, that they have been taught well.

One of the other great achievements is going to alumni parties and finding out how all these good people with whom I was associated as teacher/student, how they've done. And many of them have done extremely well. I used to take the approach that a student was a professional in need of knowledge, and I was a professional who was able to share knowledge, and that if the transfer worked well, then I was a good teacher.

Gardner:

Well, and I can say from my experience that you were.

Saperstein:

Thank you.

01:00:10 Industry and Family – Finding Balance in Personal and Professional Life

Gardner:

So, switching gears a little bit, we talked about Priscilla and her coming to America. How did your work impact your family life, and how did Priscilla and family fit in with your professional life?

Saperstein:

At Penn State, we began life in a rented apartment and then moved to a rented home. And then decided, well, maybe we ought to buy a house. And we bought a house—for those who know Penn

State—one block off the white golf course, [which has] now been redeveloped to some extent, on Ridge Avenue in College Heights. Adam and Clare were born at Belmont Community Hospital in Bellefonte, where Priscilla was eventually a full-time nurse. From that, she became a nurse educator. Every time we moved, she said, I'm just making my way forward, and you're making me find a new job.

In Kentucky, she was a faculty member at Lexington Community College, which is now an independent organization within the University of Kentucky, teaching a bridging program for licensed practical nurses to become registered nurses. And to some extent, we each went our own way and then shared experiences over the dining table. We made a point of having Adam and Clare tell us about their day. How was your day? Okay. What'd you do? Went out. What'd you do? Nothing. No, we didn't accept that. And pretty soon they were recounting things they'd done, things they'd learned, what they and their friends were doing. We had a good time over the dining table.

So, you asked how it affected [me]. I think the biggest effect was when she got angry with me because I had to go to a conference and she couldn't get away.

Now, when I go to an SME meeting, and I may go to one more—the next one's in Salt Lake City—she says, I've done Salt Lake City. They've got big blocks, and it's a long walk. I don't need to come. But for a while, she went to them all.

Gardner:

Yes, so I remember her well at many of the meetings. And this year they have a new hotel that's connected directly to the convention center. So, maybe there's no need to walk those long blocks.

Saperstein:

Steve, I'm an old-fashioned traditionalist. When I discovered that the Peery Hotel is now part of the Hilton chain, so I can get my loyalty points and stay at a Salt Lake City traditional hotel, I'll take the walk. I didn't know they'd built one.

Gardner:

Yes, it was under construction three years ago when we were there, and that's going to be the SME headquarters now.

Saperstein:
Okay.

Gardner:

The new mega hotel. Well, I look forward to seeing you there.

01:03:50 Member Societies and the Future of Mining Education

Gardner:

Speaking of our SME annual meeting, and you touched on this earlier, we're doing an AIME oral history

interview, and I think that's where you first joined the professional society when it was AIME.

Saperstein:

I did. And I told you I worked at the Engineering Society's library. And I explained that to George Luxbacher, another one of your predecessors or successors, I think, who said, I don't remember that, because I said the name of the executive secretary was H. Newell Appleton. He said, I don't remember that name. So, I looked it up, found his obituary, where he had been awarded something from AIME, and he was indeed the—I'm not sure they called it executive director in those days, but that's what he was. And there were some great people with whom I worked over the years in the various committees of SME.

Sadly, not all of them are here, but I had a good education in things like editing journals and participation in committees, and so forth.

Gardner:

Very good. How do you see SME now, the mining part of AIME, benefiting the member, the younger member, especially?

Saperstein: [27:03]

From my perspective as an educator, where I told you that education is the transfer of knowledge, very often under a set of learning objectives, almost everything SME does is the capture of knowledge and then the archiving of it, and then the transfer of that knowledge to the membership.

And yes, the printed journal remains as a way of seeing things. The development of OneMine is a tremendous bibliographic and reference feature, and anything that goes on at an annual meeting or at a section meeting, such as the New York section.

There is no section in Nantucket, so I'm a member of the virtual section. We do have two mines, but no inspectors. Because if you grow cranberries, the fertilizer comes by spreading sand over the cranberry bog. And we've got one sand pit for the bog, and we've got another sand pit for the construction people to convert cement into concrete. We've got two active mines. I tell this to my colleagues who say, we don't do mining on Nantucket. I say, yes, we do. But because it doesn't go into interstate commerce, no MSHA.

Gardner:

Interesting. Well, we have mining everywhere. Just returning from the SME mid-year meeting, membership was a big topic of conversation, and especially attracting younger people into both the industry and the society. What else can we do in that respect?

Saperstein:

It's a difficult question because membership goes up and down with the mineral economy, which is not necessarily in lockstep with the national economy. There are things that affect the mineral economy: inflationary desire for gold drives the price up, and that opens new mines; construction initiatives and

incentives help out. So, when there are jobs and when there is income, we get new members. But I can recall back before there was a national mine expo, there was a coal show, and there was an American Mining Congress mining show. Companies would rent a room, and they would send whole crews to these shows on one-day tickets with the idea that the workers, the foremen, the lead shift workers, and so forth would go assess the latest in technology. I don't know whether there's any nugget of a good idea within that old practice. There might be ways to ask our industrial partners, who are doing a great job in supporting the Engineering Foundation and supporting research grants and scholarships for new faculty, to provide internships for their young engineers to come as guests to an annual meeting. Who knows?

Gardner:

I think that's an excellent idea, and let's hope we can get that because when a young engineer goes to work, it's difficult for them to get off time and the financial support to go to those meetings.

Saperstein:

Right.

Gardner:

And the operations people, too.

01:09:32 Final Career Reflections and Signing Off – The Good, the Bad, and the Ugly

Gardner:

It's definitely been a meaningful career to you. What has been your favorite part of working in mining and mining education?

Saperstein:

I did think on that. Graduation. Seeing the product of our efforts move out into the rest of the world. I used to tell students, you know, you're going to go to graduation, you're going to hear some God-awful speech that's going to go on for way too long, and they're going to tell you that you're now entering the real world, which is why it's called commencement. I said, you'll never work as hard as you did as a student. The all-nighters, the essays, the cramming for an exam. You folks have worked your heart out to get this far. You're just changing venues is what you're doing. Keep it up. But nonetheless, graduation was always a good event. We would entertain the parents with coffee, juice, pastries, and we would tell them that their children would be joining them.

The parents would get there right on time. Where's my son? Where's my daughter? It's easy. Exams are over, and they're sleeping in till the last minute because they haven't had a chance to sleep in for two weeks. They all showed up. They all showed up.

Gardner:

Good. So, any regrets in your career, where it's taken you, or anything you wish you would have done

differently?

Saperstein:

Steve, we all have regrets. In my case, it was usually a mistaken effort at humor that became insulting. I remember some of them; I'm not going to share them. Those are my biggest regrets, because every person has her or his dignity, [and] it should not be the object of some misbegotten form of humor. But I do like my puns, and I do like my humor.

No, I have very few regrets about choices. Many of the choices were a case of, do I do this or do I do that because I hadn't planned on this thing happening, but then an opportunity arises. I hope I picked the right ones; I seem to have done so.

Gardner:

Can you sum up your career in two or three words?

Saperstein:

Yes. That's the question you asked. Can I sum it up? And the answer is yes. Now you want the two or three words. Fun, quality assurance, charitable efforts. Those are three phrases. They were actually five words.

Gardner:

I think that was good. Excellent. You've touched on this throughout our conversation, but any specific advice to the young leaders in our profession today?

Saperstein:

We've got a good crop. I turned to one of our young leaders a few years ago. I said, you know, in the passage of time, you're not as young as you used to be. Why don't you work to become a society president? Because you're involved with almost everything. So, the advice is, work hard at your assignments. Do well. Sometimes your assignments will be boring, laborious. But if you make yourself useful, you will do well. And then on the other side of the desk, when you're in charge, support your young people, promote them. Their advances do not jeopardize yours.

I've had bosses who put the young people down; didn't care for it. I've had other bosses like Tom Falkie. Tom would say to somebody who is visiting him, you know, that's a damn good question. I don't know a thing about it, but I've got somebody here who does. And always, always supportive. When you're on that side of the desk, support your people. Reward them when they do well, because as they advance, so you will too.

Gardner:

Very good. Well, is there anything else that you would like to add or that we may have skipped over, or that you would like to share at this point?

Saperstein:

Steve, on the premise that there may be one or two people I know who will be watching this, thank you, Steve, and hello to you all. It's been fun. Now time to sign off.

Gardner:

Well, it's been a fascinating and interesting career that you've had, and it's been my honor to be part of that. And thank you for all—

Saperstein:

One of the things that is on my desk is a plastic soapbox. I kept my watch in it when I was wearing my digger clothes. I still keep things like that.

Gardner:

And so do I. I've been told I keep way too much. And that's my job in the next few years: to pare it down.

Saperstein:

I do have a quick suggestion.

Gardner:

Yes.

Saperstein:

The Finches in Butte, Montana, run a very fine secondhand bookstore. Any books that you want to get rid of, send them a list, which is what I did with my technical books. And they took close to half the list and sold them. And I was able to donate that contribution to the Tom Finch Scholarship. The library at SME will take some books, particularly if they have an historic connection to the society. Good luck.

Gardner:

Well, I inherited a number of books from our colleague Dave Zegeer, and I've collected my own share. So, one of these days I will be doing just that.

Dr. Saperstein, it's been a pleasure and an honor to spend this time with you. And again, thank you so much for your willingness to share your story with AIME. And I personally thank you and thank you for everything you did for me in my career.

Saperstein:

So, in the style of the German miners, which became a motto for a while at Montana School of Mines, good luck until we see you on the surface. Glück auf!