

Interview

This transcript¹ of a recorded interview with Mr. W.E. Ballard was made available by Mr. Frank Martin of the St. Louis Metallization Company. Mr. Ballard was the founder of Metallisation, Ltd. (UK) and the author of "Metal Spraying and Sprayed Metals." He personally knew Dr. M.U. Schoop, the inventor of the metal spraying process. This interview was held in connection with the 7th ITSC, London, September 10 - 14, 1973. The interviewer was Mr. Walter B. Meyer, Chairman of the Board, St. Louis Metallization Company. Mr. Meyer passed away just before the 9th ITSC, Holland, in May 1980.²

The Beginning with Schoop

Meyer: We are talking to Mr. William Ballard who, as far as I am concerned, is the Dean of all metallizing people.

Ballard: We're starting with Dr. Schoop himself. He went to work for Thomas Edison. He was mostly interested in making a lead paint. So he got the idea of spraying to make powder. So he invented the idea. He was spraying with a small toy cannon, and when he shot against a brick wall, the pellets stuck. That was the official way the idea came to him. The actual truth was that he was making the powder. So he went to Zurich and started trying whether he could spray metal with molten metals; you know, with a small orifice and air around it. And then he was clever, so he wanted to make a lot of patents. Well, it was a bit tricky because afterwards it wasn't Schoop who got the idea. It was a German called Maier. They both patented the same idea at the same time, but Maier fell out of it altogether and the patents were left to Schoop. That's how it started. Schoop started to sell his patents. In about 1940, he won the court control of cases where people were fighting each other for exclusive rights to Schoop's patent. But Schoop wouldn't do anything. He was very clever. So he just collected all of the patent fees and that was it.

Meyer: You'd call him an opportunist.

Ballard: No! Many people since have done the same thing. But none of those people at that time ever wanted to develop the process. They were just making money quick, that was all.

Ballard's Introduction to Thermal Spray

Ballard: *And then I came to form the company "Metallisation."* In that day, there was a big engineering firm of John Thompson that belonged to four brothers who were boilermakers, the biggest boilermakers in England. And then these four brothers, or one of them, met the chap who was the director of Bellis Markham, the engineers, and also one of the banks. That was Reggie Markham. And he took over the Schoop patents. And when he found what they were, he didn't like them much, and he looked around for someone on whom he could unload them. And he found Mr. Thompson of John Thompson-William Thompson. And he bought them at a stupid price, but started to do something at Dudley. And of course, none of the pistols ever worked. Thompson said that he would like to develop this metal spraying process and would I have a go at it, you see. And I was young and innocent at the time, and I said, Yes.

Meyer: What year was this?

Ballard: 1924 or thereabouts.³ I decided to go with Thompson and try to develop this metal spraying idea. That's how I came into it. We found there was a company in Berlin who was trying to work the same thing and we bought some of their pistols. The German pistols worked then.

Feedstock Difficulties

Ballard: And, of course, one of the difficulties was, you couldn't get wire - not in long lengths. But you could get zinc wire, so they went along fairly well with zinc, and some of the early metal spraying with zinc is still in existence.

First Applications

Ballard: We started then. We went on very slowly. We lost money no end and fortunately Thompson was a fairly rich man, and he took to it. It was very, very difficult. And, of course, the idea was so strange that you couldn't get people to seriously consider it much. I used to go and call on the Air Ministry. Every week I used to go and see two chaps. They were R&D, and they used to listen to me every week and then they politely showed me the door, and said, "If you think that, prove it!" But those two men were actually very, very good friends of ours. There was a very big difficulty suddenly arose just before the war. They had the idea they had to put a balloon barrage up. When they got the cylinders made for hydrogen, they had one or two bad explosions *when the cylinders were shifted about*. So they decided to make them of very high tensile steel. And then, of course, it turned out that it was very subject to pitting. These people in the Air Ministry decided that they had to have something besides paint to protect them. And these two chaps who had been kicking me out regularly, got all the guts in the world, and I said, "We'll try this right out in spraying." *I think that we did about 400,000 of those cylinders. There was never an accident.*

¹ The interview has been edited in several places for better comprehension (indicated in italics) and to conserve space.

² Several headings have been placed within the text by the editor to identify the various topics. It is particularly interesting to note comments concerning thermal spray technology (for instance, feedstock and applications for the infrastructure) from over 20 years ago.

³ Note: Apparently it was really 1922 when Metallisation, Ltd. was formed. Ballard would have been ~27 years old.

Meyer: You also sprayed some paper that was shredded to confuse the radar.

Ballard: Oh yes. *The cannon distributed these large strips of paper and made clouds on the radarscope.* They couldn't get enough foil to make it in the ordinary way and shred it, so we sprayed paper and they shredded that. After that came all sorts of war time things, we got, for instance, two or three destroyers out to sea after they had been damaged, by building up one thing or another.

Meyer: And this was all rough threading and spraying?

Ballard: Oh no! No rough threading. This was all grit blast. We didn't believe in rough threading.

Meyer: Then your work on the Steel Company of Wales, where you sprayed the structural work — that must have been an early job. Wasn't it?

Ballard: About 1940 they decided to build the steel works in South Wales. *The architect from W.S. Atkins said painting is no good for this.* This is the biggest steel works that had ever been erected at once; in England anyway. And so he decided he'd have it metal sprayed if we could do it. And I, full of hope and something else, decided to do it! But, of course, when it came to doing it, that was quite another matter. I mean, no one had ever thought of this. We had to build the first booth and to make everything — all suddenly.

Meyer: And to finance the job.

Ballard: We had to finance the job, although the steel company helped us that way because they paid us immediately and were very, very good and they helped us finance. And all of that steel work was sprayed and is still working quite good.

Equipment Development

Meyer: Is that when you built your first pistol?

Ballard: No. We started out before that and we used our own pistols on this. We also made some automated pistols for this job. Then the building up of the company started to come and we started repair work. That was very successful.

Metallisation, Ltd.

Meyer: Metallisation, which you founded or helped to found, built the guns. You did contracting work, and somewhere along the line, it became two separate companies, did it not?

Ballard: No, No! Never two companies. Oh, no. We had a small company where we built our own pistols. It was a small firm which was owned by us. It was all Metallisation. Then we added other contracting works to that.

The Future

Meyer: O.K. From where you sit now, what does it look like in the future?

Ballard: Oh, undoubtedly, it will depend on the men in it. If they work reasonably hard, and some of them will, the thing can't go back. And there are all sorts of things coming. We haven't gotten to the limits. We have just started. But it is difficult to say just where it will go. I believe anti-corrosion work will go up to the fore again and possibly the work of Timmons, the first of the British sprayers. You see, Timmons originally was a paint man. He is pushing this now and the result is that I think aluminum spraying will come to be used much more than it is now.

“The Book”

Meyer: You may not know it, but everyone in the metal spray industry in the States knows who you are. Most of them have read your book.

Ballard: Tell them it's right on the dot as far as I know.

Meyer: You put a lot of work in that book.

Ballard: It was done only in my spare time; *it has done its best.*

International Thermal Spray Conferences

Meyer: What's your opinion of this Conference here at this time?

Ballard: *Oh, there again, we started that (the conference).* We had the Birmingham one in 1958. Parks and I ran that. We started then, of course. The Association then decided to take an interest.

Meyer: You started the Association of Metal Sprayers?

Ballard: Oh, no! No. It was started by 4 or 5 companies who bought metal spray equipment. That was 1932.

U.S. Activity

Meyer: That's interesting. We have two people in the States who began in metal spraying in 1926. One is Bill McMakin with the Metallizing Company of America. The other one is Stu Hammond who started out with Binder in Philadelphia. Bill went into equipment sales and Stu went with Metalweld in Philadelphia. I started out with the John Nooter Boiler Works Company in St. Louis. But I was with Metco for about 3 years (before Nooter) — '36, '37 and '38. Then I got into contracting. You know, there are a lot of second generation people in metallizing And probably some third generation.

Ballard: That worries me because I have agreed that metal spraying is not a process, it is a disease. And if you've caught it, you've got it. And I think we have to agree we couldn't pass it on to someone else (laughter). It's infectious.