AIST Life Member

✦ BRUCE SHIELDS

Bruce M. Shields, a 64-year Life Member of AIST, retired from U. S. Steel in 1983 as director of metallurgical engineering after 41 years of service. Some of his interesting professional positions included chief metallurgist at both Duquesne and South Works and many overseas assignments to Spain, Italy, Russia, Japan, Australia, Germany, England, Romania and Canada, to name a few. To date, Bruce has made 156 visits to 74 countries.

When I started to work at South Works of the Carnegie-Illinois Steel Co. in 1947, my boss, Dr. Bernard R. Queneau, chief development metallurgist, was a strong advocate of joining, attending meetings and becoming involved in the administration of the local chapters of technical societies related to the steel business. He stated that this was a very good way to meet other industry people, visit other plants, and keep up-to-date with the most recent technical developments. So I joined the local chapters of both ASM and AIME. I enjoyed the local meetings and particularly liked to go to the yearly conferences of the Open Hearth Division, where I met more people, heard excellent technical papers presented, and even presented some of my own. My AIME membership evolved into what is now AIST, and I have maintained membership ever since 1947 (an impressive 64 years)!

My AIST membership has enabled me to meet and make friends with other steel industry people who can and do answer puzzling technical questions. The technical meetings have been very informative and have provided me with the opportunity to write and present my own technical papers.

Throughout my career, I have met many interesting industry professionals. My uncle Julian was well-known as Andrew Carnegie's "Furnace Wizard." I met Ben Fairless once, when I was chief metallurgist at Duquesne Works and he commissioned the new metallurgical laboratory at the plant. I first met Edgar Speer when he was assistant general superintendent at Duquesne

Works. He was my idea of a real steel man. I had three personal mentors that stand out in my memory. The first was Dr. Bernard R. Queneau (now 98 years old), who hired me at South Works in 1947 when I finally graduated from Carnegie Tech after my army service. He was also the one who encouraged us younger metallurgists to join and take an active part in the various technical societies. The second was Robert W. Graham, who was general superintendent of Duquesne Works when I arrived there from graduate school; we were both studying Spanish, and he transferred me to Bilbao, Spain, to join the USS group that was helping to improve the operations of Altos Hornos de Vizcaya. After six months in Spain, I was transferred to Pittsburgh as manager of process metallurgy for the Heavy Products Division, and Bob Graham was again my boss. I learned a lot from him, and he arranged for me to be mission leader for several very interesting foreign consulting trips. My third mentor was Richard Simon, vice president of metallurgy. Dick took a great interest in my career and promoted me to manager of tubular metallurgy, and subsequently to general manager of process metallurgy. There were many other people who helped along the way, but these three were special.

When asked about the most exiciting technical developments that I've worked on, there are two specific areas that were of great interest to me. The first was the development of an "Arctic" grade steel for SAW (Submerged Arctic Welded) line pipe to eliminate long-running fractures when operating at high pressures and very low temperatures. There had been several large-diameter pipelines conveying natural gas at high pressure that had ruptured by accident, and the fracture had run for miles. This was a challenge to U. S. Steel and a task force of scientists and technicians (including me) was assembled to develop a new grade of steel to meet the requirements of stopping crack formation in line pipe operating at high pressure under sever Arctic cold temperatures. The end result was the development of an Arctic grade of line pipe steel that will meet the requirement of minimum fracture propagation at high pressures and low-end temperatures.

Though not a technological development, the most interesting and long-lasting development for me was an "Introduction to Steelmaking" course which I taught for over 10 years to new management trainees in such departments as law, accounting, systems development, research, product development and sales — people who used the steel mill language in their daily work but had never seen the mill equipment in operation). We took many plant trips, which became one of my favorite ways of keeping up with any changes made in steelmaking and rolling practices for sheet products.

You could say that the steel industry has gone through a major revolution since I started at Homestead Works in 1942. However, my AIST membership has provided me with ready access to other people in the industry and educational institutions who were always available to answer questions. This was especially important after I retired from U. S. Steel and was fully responsible for keeping myself up-to-date so that I could present myself as a qualified consultant.

— Bruce M. Shields retired from U. S. Steel after 41.5 years of service