

Dr. George A. Roberts, FASM (1919-2013)

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by Dr. Robert Mehrabian, FASM

It is my honor to speak about my dear friend, fellow metallurgist and colleague, Dr. George A. Roberts, as we memorialize his many contributions as a scientist/engineer, business executive, societal leader, and major supporter of science and engineering education. My comments will focus more on his contributions to metallurgical science, the advanced processes used in manufacturing of tool steels and vacuum melting of high strength/high temperature alloys, and to the phenomenal rapid growth of one of the most exciting companies in the history of Corporate America.

After a short stay, along with his friend Dr. Henry Earl Singleton, at the U.S. Naval Academy, George graduated from Carnegie Institute of Technology (now Carnegie Mellon University) with a Doctor of Science degree in 1942.

While at Carnegie Mellon he worked at Bell laboratories and learned about vacuum melting processes which he later applied to production of high strength/high temperature commercial alloys.

From 1941 to 1966 he worked at Vanadium Alloys Steel Company, also known as Vasco, where he advanced from research metallurgist to President in 1961, and Chairman of the Board of Directors in 1964.

During this period he published a number of papers and books on tool steels and was awarded a number of patents on alloy steels. He served the technical community in leadership roles as President of American Society for Metals (ASM), twice as President of Metal Powders Industries Foundation and made significant financial contributions to the ASM materials Education Foundation and served as its president and subsequently as a trustee.

Today, the Foundation is on the threshold of reaching a total of 100 scholarships funded by Dr. Roberts. He was awarded many honors in his illustrious career, including a Fellow of the ASM, the ASM Gold Medal, a Fellow of the Metallurgical Society and the Howe Memorial Lecturer. He was elected to the National Academy of Engineering in 1978. He was also elected a Trustee of Carnegie Mellon University while at Vasco and continued as a life trustee and emeritus trustee throughout his life.

I was privileged to know Dr. Roberts first at ASM, then as a member of the National Academy of Engineering, also while I served as President of Carnegie Mellon University in the 1990's, and subsequently as a fellow Board member and colleague at Allegheny Teledyne. We remained in close contact in the past thirteen years as I have been fortunate to continue the Teledyne legacy at Teledyne Technologies.

At Carnegie Mellon we constructed the George A. Roberts Engineering Hall in the early 1990's, made possible through his very generous donation to the school. I will always remember his various quotes from the bible, Andrew Carnegie, Blake and Polybus at the dedication ceremony of his building. He mused about "surplus" and "enough wealth" and ended the day by saying at least he had avoided Carnegie's famous quote, "He who dies rich, dies disgraced."

Dr. Roberts' corporate career success mirrored his professional and philanthropic life. While at Vasco, he introduced Vasco Supreme, the first super-hard, high-speed steel that revolutionized many metalworking processes. Later, Vasco became the producer of 18% nickel maraging steels which were used in high strength/high temperature applications. I remember a number of years later using liquid metal atomizing processes to study the microstructure of these alloys.

During the 1960's, as was happening at Teledyne which was founded by Dr. Singleton in 1960, Dr. Roberts was growing Vasco through a series of acquisitions including Allvac Metals Corporation which specialized in vacuum melted alloys. Dr. Roberts had already introduced vacuum melting at Vasco and through this acquisition Vasco became a major producer of high-purity vacuum melted cobalt, iron, nickel and titanium-based alloys – vital in many aeronautical, space and industrial applications. By 1965, the company had over \$40 million in sales and was listed on the New York Stock Exchange.

After leaving the Naval Academy George had maintained a relationship with his close friend Henry Singleton. For some time they had been talking about the possibility of combining Vasco metals with Teledyne. In 1966, George and Henry met and agreed to a merger.

I will always remember seeing the small rectangular piece of white paper on which George and Henry had written their merger agreement. A few words were crossed out and replaced, but other than that, it is an elegant and simple piece of paper denoting the merger of two public companies and is a testament to the trust between two friends. By the end of 1966 the combined company had \$257 million in sales. At the same time the pace of acquisitions picked up and by 1970 Teledyne had over \$1.2 billion in sales. By the end of the major acquisition programs Teledyne was a corporation of some 130 companies ranging from digital communication, complex metallic alloys, and consumer products to Teledyne Ryan Aeronautical that produced the most advanced unmanned air vehicles (UAVs)

including the Global Hawk. By 1981, sales exceeded \$3 billion and Teledyne continued its growth primarily through internal investments until its merger with Allegheny Ludlum Corporation in 1996. A detailed and thorough history of this amazing company, its merger to form Allegheny Teledyne, and subsequent breakup into three publically traded companies (Teledyne Technologies, Allegheny Technologies and Water Pik Technologies in 1999), is detailed in Dr. Roberts' book entitled Distant Force, named for Tele-dyne, in 2007.

Dr. Roberts assumed responsibility for all operations of the company in 1966 while Dr. Singleton focused on capital allocation including diversification into insurance companies, significant investments in a few public companies and pioneering stock buybacks through major tender offers to Teledyne's shareholders.

I believe it is important to recall Dr. Roberts' contributions to Teledyne, over his 27 years, first as President and later as Chief Executive Officer, through the eyes of his managers and colleagues with whom I have consulted. George was the public face of Teledyne, gracious both with customers and with Teledyne's employees. His personal warmth was evident and he always showed a genuine interest in the people he met.

George was closely involved with the many acquisitions that Teledyne made in the early years. He was able to convince founders of companies that their legacy would be in good hands at Teledyne. A testament to his personable style and leadership is that most of the company founders stayed with Teledyne after the acquisition, often until they eventually retired.

George's memory was legendary throughout Teledyne. At Teledyne meetings, or when visiting the operating companies, he would walk up to individuals, greet them by name and remind them of prior interactions, even if they occurred many years earlier. It was not unusual for him to have a much better recollection of events associated with a business than the local managers themselves. George augmented his exceptional memory with his small notebooks, which were also legendary. He would take careful notes and could refer to them to refresh his memory many years later.

George was a great believer in the value of applying advanced research to Teledyne's products. In 1975, he introduced the Teledyne Research Assistance Program, which was designed to promote cooperative research between individual Teledyne companies and institutions of higher education. Teledyne companies were encouraged to propose research projects, on subjects of interest to them, to be carried out in cooperation with selected universities. If approved, these projects were funded by the corporate office. Under this program, 320 projects were carried out, with participation by 80 Teledyne companies and 112 US universities. Today, Teledyne Technologies maintains this legacy through cooperative research programs with many universities.

George was always focused on planning for the future, but was equally concerned to incorporate lessons from the past. This was exemplified in a talk he gave to the managers of a Teledyne company that had just completed a record year with operating income among the highest in the corporation. He spent about five minutes congratulating the team on their achievements, but spent the rest of the talk on the subject of change. He noted that market conditions are beyond our control, but good leaders can plan for contingencies and must react quickly when changes occur. George's remarks proved to be prophetic. The Teledyne Company where he gave the talk primarily served the defense industry. The talk was given a few years before the end of the Cold War, which ushered in an era of significantly reduced defense spending.

Finally, as George noted at the dedication of the George A. Roberts Hall at Carnegie Mellon University in 1995, he spent 53 years at essentially one company (26 years at Vasco and 27 at Teledyne). He quoted Mark Twain as his teacher when he said "Put all your eggs in one basket and watch that basket." We are all grateful that he watched the basket called Teledyne with such care, foresight and integrity.

I will conclude on a personal note. I wrote our current Board of Directors of Teledyne Technologies about George's passing. One Director, Frank Cahouet, who has served on the Board of Teledyne continuously for several decades, responded with three simple yet elegant words – "A Wonderful Man." Yes, our friend Dr. George A. Roberts was truly *a wonderful man*.