

# Arthur Collins

## *Radio Wizard*



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# INTRODUCTION

## A MAN OF GENIUS

The final week of February, 1987 brought the deaths of three prominent Americans. Two of them, Andy Warhol and David Susskind, were indeed famous: Warhol as perhaps the world's foremost pop artist, and Susskind an accomplished television, film and theatrical producer. Their passing and the contributions they had made to American culture received extensive media coverage at the time.

The third man to die was less widely known, except in select technical circles and the communities where he worked. His death at the age of 77 received scant if any notice in most newspapers and national media. It was major news only in Cedar Rapids, Iowa, Dallas, Texas and Newport Beach, California.

Yet his lifetime achievements will be long felt in terms of their advancement of technology and their impact on activities of millions of people every day.

He was Arthur Andrews Collins, inventor par excellence, a genius in the field of radio communications and builder of a major business enterprise.

He has been compared with the great Guglielmo Marconi in that both men made vast and significant contributions to the advancement of radio. There are many striking parallels in the lives, work habits and personalities of the two men.

Neither Collins or Marconi discovered major new scientific phenomena, but both utilized such findings by others to develop practical equipment.

Marconi is credited with inventing a system of wireless telegraphy, the basis of modern radio. When Arthur Collins came along years later, he made radio work far better than scientists before him had done. He had a unique understanding of the physics of radio waves and the ability to design equipment to more effectively transmit and receive radio signals.

Collins adapted his skills to a wide range of applications in the field of radio communications. Some were truly innovative first-time applications, others were major advances in the state of the art. He was either the inventor or the guiding force in equipment and techniques that made possible the many achievements of himself and his company.

Arthur himself, through his own creativity, can be credited with important roles in several historic events of the twentieth century.

Today the work of Arthur Collins is a factor in the flight of every commercial airliner. No single person has been more responsible for the ability of air transports to fly and land safely in adverse weather and on schedule than Arthur Collins. He and his colleagues developed many of the electronic systems for air-to-ground and air-to-air radio communication and navigation, as well as aircraft instrumentation and flight control. The business he founded in 1931 continues

today to be the world leader in designing and producing high performance avionics systems. (Avionics comes from the words aviation and electronics).

Equipment he developed gave America and its Allies a significant edge in many areas of communications capability in World War II, the Korean and Vietnam conflicts and the so-called Cold War. And since that time the Collins company continued to play a major role in communications and avionics equipment for the military and manned spacecraft.

Collins equipment, often out of sight but as essential to communication as an engine is to making a car go, has been part of many historic events of this century. A Collins-built transmitter aboard the U.S. Battleship Missouri enabled the world to hear (in those pre-television times) the Japanese surrender ceremony which ended World War II. Collins transmitters have made thousands of other overseas and Voice of America broadcasts possible. Collins amateur, or ham, radio equipment, for years the unquestioned leader in that field, has been used to summon help in numerous floods, earthquakes and international crises.

The atmosphere of engineering creativity which Arthur Collins fostered in his company led to a long list of technical breakthroughs. Experiments by the company after World War II helped prove that intelligible radio signals could be transmitted through the void of outer space. The firm later made the spacecraft radios by which Americans heard the voices from space of all the Mercury, Gemini and Apollo astronauts, and provided much of the ground antenna equipment to communicate with spacecraft. Collins systems transmitted television of astronauts on the moon.

Arthur Collins revolutionized high frequency (short wave) radio, the primary method of long range communication before satellite relay became possible, and which probably always will be widely used.

His work in high frequency single sideband was a major advance which gave U.S. commanders reliable around-the-world communication with SAC bombers when they were our main defense against Soviet hostility in early days of the Cold War.

He spawned major innovations in commercial broadcasting transmitters and in microwave radio relay systems. He was responsible for breakthroughs in achieving dependable data transmission and for much of the technology marrying computers and communications. He even can be credited with innovations in computers themselves.

Had he been able to continue his company's major development project when he was forced to give up control of the firm, he may well have advanced computer technology and integrated systems management applications by many years. He and his engineers developed and were using data transmission and computer control concepts understood by very few in the 1960s, but which became commonplace with the advent of e-mail and the Internet.

Years after his death, much was touted about the digital revolution and information highway. Arthur Collins saw them coming, and tried diligently to make them happen much sooner than the evolution of such developments. As far back as the 1950s, he was preaching on the digital theme.

Barely out of his teens in the Great Depression years of the early 1930s, he started a company that quickly gained recognition in radio circles for equipment of advanced design and higher quality than anything available to that time.

Still a small enterprise when World War II broke out, by the time the war ended the Collins name had become legend to those servicemen who worked with radio gear used on ships, aircraft, vehicles and in ground stations. Stories of the reliability and performance of Collins-built equipment under the most severe of wartime conditions were widely repeated in radio circles.

The post-war era which followed was a springboard for a literal explosion of technical developments coming out of the Collins Radio Company. Arthur Collins either suggested or was the lead engineer on most of them.

Arthur Collins' company was a fascinating place for the person who combined technical ability with an innovative and curious mind. Activities within his firm were a reflection of more interests than radio communications — cyclotrons, hydrodynamics, aerodynamics, celestial navigation and more.

Growing recognition and soaring sales volume in the late 1950s gave Collins Radio Company a fleeting period as the darling of Wall Street, becoming the most actively traded stock soon after going on the New York Stock Exchange. Some of the company's products were in such demand they literally sold themselves.

Few American companies can match the record of technical "firsts" which Collins laboratories yielded over four decades. Arthur Collins personally was responsible for 20 patents and a co-inventor on nine others, numbers far lower than he could have claimed. Through it all he had an unrelenting fetish for quality in design, manufacture and performance.

Many Collins products, including some of World War II vintage, still operate flawlessly and continue to be in high demand years after being outmoded by more advanced technology. Collins transmitters made in the 1940s and '50s not only remain in use — they often are held up as the standard against which more recent designs are measured.

That devotion to the highest possible quality level kept Arthur Collins firmly opposed to developing and producing an affordable mass production, consumer market product, although he was urged to do so in the interest of profit.

Arthur Collins' philosophy about what was required for his products was simple: if a certain part, component or manufacturing technique needed to meet our standards does not exist, we invent it. At one time the Collins Radio Company had nearly 1,000 products in its inventory which it could build — every one of them an original company design.

There is no doubt, as with almost every major achiever of this world, that the times and circumstances of his life played a major role in what Arthur Collins did. Still, he was the one with the talent, drive and foresight to take advantage of opportunities confronting him and his organization.

Indeed, his singular greatest forte may have been his vision. He had the unique talent to foresee the future trends and capabilities of technology, and how they could be adapted for users of technology. Then, in many instances, he formulated

concepts, designed and developed hardware and systems through his company to meet the needs of users. He was admired by his supporters and both envied and despised by his competitors for thinking and doing years ahead of his industry contemporaries.

Arthur Collins surrounded himself with teams of talented persons who could learn from him, who could contribute to common objectives, and from whom he could learn. Only a few of them ever felt they knew him well.

To the majority of his employees, numbering nearly 25,000 at one time, he was regarded as somewhat of a mystery man but a technical genius. In reality he was anything but the inept business manager which some detractors called him, because of the sometimes disappointing financial performance of the company.

There was no doubt in his mind that the company he founded (at its peak equal to a multi-billion-dollar firm in today's dollars) existed to give bent to his technical ability and ambitions.

Unlike many American industries today, the Collins Radio Company of 1931 to 1971 was not afraid of risks. Rather than taking a safe, conservative course which would please Wall Street, the firm continuously risked its future on advancing the state of the art in communications technology, challenges it usually won.

As Collins Radio Company was different in that way from most business enterprises, it differed in other ways as well. Many employed there found it not only a demanding but a fun place to work.

The primary emphasis at Collins Radio Company was always on technical disciplines and achievement. Consequently, it was the professional employee with technical skills and training, the engineer and engineering support person, who was held in the highest regard.

Arthur was not motivated by money, although it was important. Neither was he motivated by esteem or prestige. He demanded creativity, dedication, loyalty, trust and integrity of himself and his employees. He paid them well but not lavishly. He was more concerned about their work environment, the tools and resources they needed to do their jobs, the quality and reliability of the work output.

Thus the main reward for those who stayed with him was fulfillment in their achievements — knowing in most instances they were associated with the best in a given product and a company which was a winner.

*You never had to apologize for being with Collins Radio* was a phrase repeated by many who sold the products.

Arthur Collins was a self-educated, complex, studious, soft-spoken man who often was regarded as an introvert. He shunned interviews and was terribly uncomfortable on those rare occasions when he consented to give a speech. He read extensively with a wide range of interests, but in particular had an insatiable appetite for scientific knowledge.

His true nature was that of a relentless driver of seemingly tireless energy in pursuit of technical goals which often looked impossible to co-workers. But once the goal was reached, he was the first to give credit to his associates for the attain-