

Alfred Powell Morgan: the Eternal Boy Turns 120

By Brian R. Page, N4TRB
n4trb@arrl.net

September 09, 2009

The story of a man whose books fired the imagination of a generation of young experimenters.

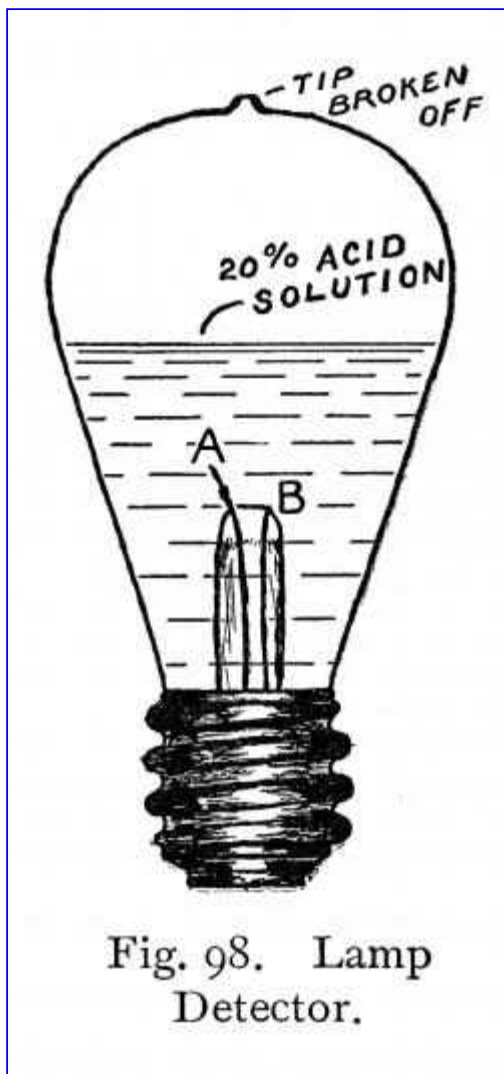


Figure 1 — An illustration of a detector made from a light bulb filled with acid. This diagram appeared in the 1910, *Wireless Telegraph Construction for Amateurs*. Even in our day of rapid advances, it's difficult to comprehend the evolution from spark transmitters to semiconductors that Morgan not only witnessed but mastered and then articulated in his many

His real name was Alfred Powell Morgan, but Peter Pan might have been a better moniker for the man who led many a lost boy into the Neverland of radio and electronics through much of the 20th Century.

For ham operators who came of age in the last half of the last century, Alfred Morgan is chiefly remembered for a set of four books, beginning with *The Boys' First Book of Radio and Electronics*. Published by Charles Scribner's Sons, these titles were staples of elementary school libraries. In this year, the 120th anniversary of Morgan's birth, it's worthwhile to take a look at the books that inspired so many amateurs and to learn a bit more about the multifaceted author behind the titles.

The Boy Genius Takes Off

Alfred Morgan's name first appeared in print in a *New York Times* article describing his youthful attempt to test-fly a homemade aircraft. The year was 1909 and the test was, unfortunately, unsuccessful. Subsequent efforts must have been more satisfactory since Morgan's debut as an author was a book entitled, *How to Build a 20-foot Bi-Plane Glider*.

Airplanes, of course, were the rage in the early decades of the 20th Century. Radio was another

publications. [Illustration courtesy of Pete Friedrichs, AC7ZL, photo]

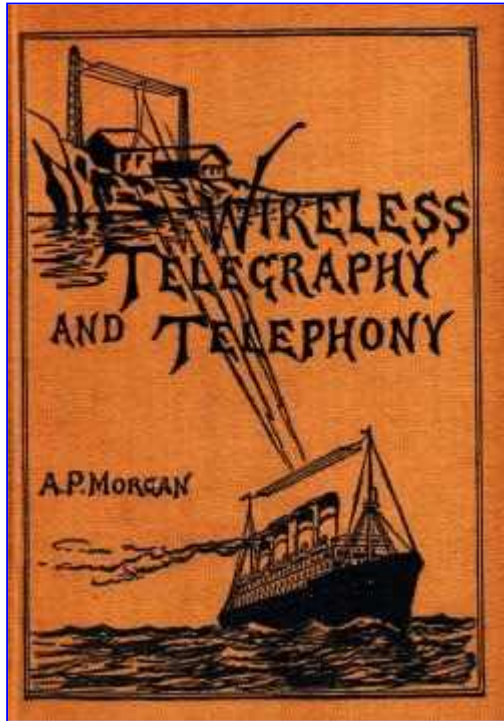


Figure 2 — Two years after publishing his definitive guide for amateurs, Morgan explained the new science of wireless to the general public in this volume. Morgan dedicated the book to Nicola Tesla, “whose inventions are the basis of all modern wireless transmission.” It conveyed the new technology in a wealth of illustrations and photographs together with Morgan’s lucid text. [Brian R. Page, N4TRB, photo]



Figure 3 — An illustration of the Paragon RA-10 regenerative receiver from a 1922 Adams-Morgan catalogue immodestly promoted as “the finest short-wave receiver in the world.” In 1922 the set sold for \$75, which is equivalent to some \$920 in today’s currency. [Illustration courtesy of the Benson Ford Research Center, The or, as he called it, a “Gamma Sniffer.”

emerging technology and Morgan’s attention soon turned to wireless communications as the cornerstone for his professional life. According to a brief autobiographical sketch, the young Morgan struggled to find publications appropriate for his age. As an adult, he vowed to create those publications, which he had lacked as an adolescent. In this endeavor, unlike his first attempt to fly, Morgan was supremely effective.

The Boys’ First Book of Radio and Electronics appeared in 1954. It kicks off with some detailed descriptions of the experiments of Heinrich Hertz and the commercialization of radio by Guglielmo Marconi. As a 4th grade student I confess to skipping these fundamentals together with details on radar and television. Instead, I went straight for the middle of the book, for a chapter that begins with the words, “For less than one dollar you can buy a marvelous scientific device — namely a ‘tube’ for a radio receiver.”

My first project was the crystal radio, a project so important that it warranted a full page illustration. As a broadcast receiver, my radio was a dud. All it picked up were conversations from the telephone line located above what passed for an “antenna.” Nevertheless, the crystal radio appeared in all of Morgan’s books, serving as a standard introduction to schematic diagrams.

With *The Boys’ Second Book of Radio and Electronics*, in 1957, Morgan broke new ground in several areas. First, he introduced transistors, those “versatile midgets which can do the work of vacuum tubes.” There followed a handful of transistor projects using such devices as the now legendary Raytheon CK722 and General Electric 2N107. After the chapters on transistors, Morgan returned to vacuum tube projects including a design that was perhaps inevitable for the late 1950s in a country newly under the threat of nuclear annihilation: a home-made Geiger counter

Henry Ford, photo]



Figure 4 — An Adams-Morgan Paragon RA-10 spotted in the boneyard of the Dayton Hamvention® in 2007. Note that the asking price of \$950 is close to the equivalent value of the receiver in 1922. [Brian R. Page, N4TRB, photo]



Figure 5 — This look inside the Paragon RA-10 shows why Paul Godley's skilled hands were needed in Scotland to detect the first transatlantic transmissions from American hams. The RA-10 was the tuning component in a complete receiver system. As evident in this photograph, tuning involved sensitive interplay between sensitivity, bandwidth and wavelength. [Photograph courtesy of Henry Rogers, W7HTR, photo]

Of Morgan's quartet of Radio and Electronics books, the third provides the best all-around coverage of radio and electrical fundamentals together with the usual collection of projects beginning, naturally, with the crystal receiver set then extending to tube receivers, transistor sets, a powerful transistorized public address system, home intercom and electronic organ. If the publisher, Scribner's imprint of Simon & Schuster, were to reissue only one of Morgan's many books, this 1962 title would get my vote. The book provides a solid foundation that is relevant even today; and Morgan resisted topics such as radar, Geiger counters and homemade phonograph players that appear in his other books.

The final chapter is priceless. Entitled, "Be Your Own Electronics Engineer," Morgan presents a variety of transistor circuits without his usual meticulous construction details and charming illustrations. Instead, he supplies hints and tips on how to turn a schematic into hardware.

The grand-slam book in the Radio and Electronics series was published in 1969, only 3 years before his death at the age of 82. Born in 1889, Morgan grew up along with radio and he made the most of this opportunity. His first detectors used noxious acids and were firmly a part of the "string and sealing wax" school of experimental physics (see

Figure 1). By the end of his life, Morgan employed semiconductors, the physics of which didn't exist at the beginning of his career.

If Alfred Morgan had done no more than author the four *Boys' Books of Radio and Electronics*, he would be well remembered for inspiring a generation or two of amateurs. But Morgan was already famous in ham radio circles long, long, before he published the books that I found so captivating in the early 1960s. Indeed, his renown extends all the way back to the dawn of Amateur Radio in the United States.

A Homebrew Education

Alfred Morgan prefaced his 1942 publication, *First Radio Book for Boys*, with a brief

biographical sketch. By his own account, Morgan first became interested in the new technology of radio in 1903 and garnered sufficient details from articles in *Scientific American* to build a simple spark set that could communicate several hundred feet.

Of this early effort, Morgan observed, “The battery, too, was home-made. Four carbon rods and four zinc rods suspended in fruit jars containing a mixture of sulphuric acid, bichromate of potash and water, generated current for the coil. I had a great deal of trouble with my parents over this battery... The coherer and spark coil were endured with suspicion but the battery soon became a distinct social outcast.”

Morgan’s parents evidently endured a number of other experiments besides the homemade battery, for by 1910 Morgan had accumulated sufficient expertise to publish a most influential book: *Wireless Telegraph Construction for Amateurs*. *QST* called this text, “the standard handbook for amateurs.” It’s easy to see why. Even this early publication exhibits the same clear writing style and meticulous detail that made the Boys’ books so effective. One can imagine that a ham of 1910 would need no more than Morgan’s book to get on the air. Two years later, Morgan capitalized on the success of the technical book by producing a volume aimed at explaining radio to the general public (see Figure 2).

Having written the book on radio, Morgan’s next step was almost inevitable. He attended the Massachusetts Institute of Technology for 1 year but found the entrepreneurial calling irresistible. Around the same time that he published *Wireless Telegraph Construction*, Morgan went into business manufacturing radio components. The Adams-Morgan Company of Upper Montclair, New Jersey, became noted for supplying components to the US military, the nascent broadcast industry and radio amateurs.

A Radio Partnership

The success of the component business was compounded in 1915 when Paul Forman Godley joined as a third partner in the Adams-Morgan firm. Paul Godley was the foremost radio receiver designer of the age. He first achieved notoriety by adapting Edwin H. Armstrong’s regenerative circuit to the “short” wavelengths used by amateur operators. Godley held the amateur call sign 2ZE, while Morgan’s was one dit away at 2ZI.

With Godley onboard, Adams-Morgan began selling a line of “Paragon” receivers. Several models were produced including the Paragon RA-10, which achieved a measure of fame in the 1921 transatlantic test (see Figures 3 and 4). In 1921, Paul Godley was invited by the ARRL to journey to England and Scotland in an attempt to receive radio communications from US hams. From our perspective in the early 21st Century, it’s

hard to imagine why an American would be sent across the Atlantic Ocean for such a test. Why couldn't British amateurs simply give a listen?

The answer to this puzzle involves the reason Amateur Radio exists in the first place. Commercial operation in the early days of radio used high power, huge antennas and wavelengths on the order of 1000 meters. The "short" waves, those 200 meters and down, were considered so useless that they were fit only for amateurs. British amateurs at the time were permitted to use only the 1000 meter wavelengths. So there was real justification for sending an American operator who was expert at receiving the vastly shorter wavelengths around 200 meters. Godley, inventor of the Paragon, was the man for the job (see Figure 5).

To make a long story short, the test was successful. Godley heard US hams on his experimental superheterodyne receiver and on the Adams-Morgan regenerative Paragon.

Unfortunately, Godley's partnership with Morgan was not a smooth one and after a number of differences plus a few more Paragon models, the arrangement dissolved. Godley left the firm in 1924. The Adams-Morgan Company lingered a few more years but disappeared entirely around 1928. Nevertheless, the fame of the Paragon was well established along with both that of the manufacturer and of Godley who was known as "Paragon Paul" to the end of his days.

Morgan subsequently turned much of his attention to writing dozens and dozens of books on a great variety of subjects, including the series that inspired my generation of hams. The final paragraph of his autobiographical sketch reveals a sentiment with which hams everywhere can identify: "I have never lost a sense of awe for radio science or a fellow-feeling with the lad who likes to putter with antennae and oscillators....It is for him that I have written this book."

Brian R. Page had the good fortune to grow up in Satellite Beach, Florida, surrounded by the technological marvels of the early space age and attending an elementary school that possessed the first three of Alfred Morgans's Boy's books. Morgan's inspiration led to some rather strange science fair projects using cast off components from some of the local high tech companies. An ARRL member since 1969, Brian was eventually licensed in 1982 as KB4CGU and now holds an Extra class license with the call sign N4TRB. He can be reached at 1717 Tidewell Trace, Lawrenceville, GA 30043.

Copyright © 2009, American Radio Relay League, Inc. All Rights Reserved.
