

Paragon Paul – 1921 Transatlantic Test

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This December marks 99 years since amateur radio signals first spanned the Atlantic Ocean. Those were exciting times. The “War to End All Wars” was over and for radio amateurs the 1920s roared in with promising new technology. The vacuum tube of John Ambrose Fleming, quickly perfected by Lee de Forest, in the early years of the century proved revolutionary. The Audion, as de Forest called his device, worked as a detector of RF signals, an amplifier of both audio & radio frequencies, and as a continuous wave (CW) oscillator. This single innovation replaced spark as a way of generating RF, and the cat whisker & germanium crystal contraptions used to receive. In short, the Audion marks the true beginning of modern electronics. And by the 1920s vacuum tubes had made their way into the amateur ranks particularly via Edwin Howard Armstrong’s regenerative and superheterodyne receiver circuits.

The successful December 1921, transatlantic test was preceded by an earlier attempt, a failure, a dismal failure. In that earlier test, the American Radio Relay League (ARRL) had made arrangements with British amateurs to listen for twenty-five powerful U. S. stations on the nights of February 1, 3, and 5. Alas, not a single U. S. station was copied by **any** of the 250 British amateurs participating in the test. This failure, however, was not particularly surprising.

While U. S. amateurs had been relegated to the “useless” wave lengths, 200 meters and down, the British amateurs had been allocated what was then considered prime frequency real estate in the 1,000-meter band. Thus, British amateurs had little experience with short waves, and their antennas & receivers were not optimized for the 200-meter signals used by U. S. hams. As the QST writer observed in reporting the failure, “We would bet our new spring hat that if a good U.S. amateur with such a [standard American regenerative] set and an Armstrong Super could be sent to England, reception of U.S. amateurs would straightway become commonplace.” So that’s exactly what the ARRL did.

The U. S. amateur chosen for this, shall we say, DXpedition was Paul F. Godley, one of the premier receiver designers in America, famous for his Paragon RA-10 regenerative receiver. Godley and his receiver were so famous that he acquired the nickname “Paragon Paul,” a name which stuck to him forevermore.

For this second attempt, the ARRL once again arranged for a select few U. S. stations to each transmit a unique five letter secret code, the contents of which had been shared with a British official acting as a referee on the receiving end. Godley was to report his copy of the U. S. signals to the referee who would validate success or failure. And there was plenty of skepticism on the British side given the massive



“Paragon” Paul F. Godley in a photograph taken in the year following the successful transatlantic test. Note that by his example, amateur radio appears to have been a much more formal affair than it is today. He did, however, remove his jacket and roll up his sleeves. Some informality must have been acceptable.



A Godley-designed Paragon RA-10 receiver photographed a few years ago at the Dayton Hamvention. This model was one of the two receivers that Godley used for the successful test. Note the asking price of \$950. Needless to say, I didn’t bring it home with me.

failure of the February attempt. As Godley later wrote, “these British amateurs had been unable to decide whether I was just a ‘nut’ or whether I was really confident of our ability to put the thing over.”

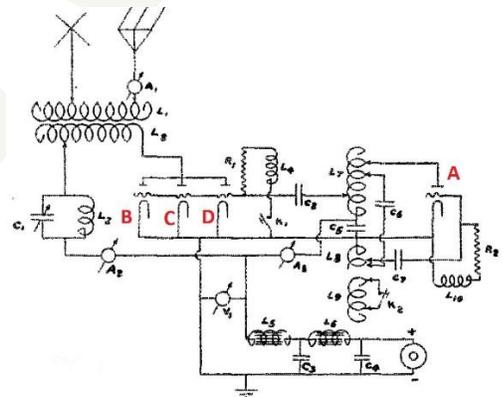
Godley set sail from New York City aboard *Aquitana*, bound for Southampton. By happenstance, also aboard *Aquitana* was the electrical engineer Harold H. Beverage, of the newly invented Beverage antenna fame. The Beverage antenna is a receiving antenna radically different from all other antenna designs, and it is highly directional, a feature that played a part in the success of this second transatlantic test. Godley & Beverage hit it off and, in Godley’s words, “I had not been with Beverage long before we got around to that thing which is nearest his heart, to wit, the Beverage wire, as a static reducer.” In any event, upon arrival in the U. K., Godley was whisked off by his hosts to London where he met J. A. Fleming and Guglielmo Marconi, the inventor of practical radio. Ultimately, Godley settled in with his host, British amateur Frank Phillips at his station quite near London. At that point Godley discovered that British skepticism might have been fully warranted: “we settled down onto 200 meters to see what it was like. And what do you suppose we found. Static! Gobs and gobs of it. And harmonics, whole orchestras of them!” In short, Godley quickly concluded that it was hopeless to pull any U. S. signals out of the noise from that location.

To improve that chance of success, Godley packed up his receivers and headed to Ardrossan, Scotland, where he arrived on the evening of 3 December, just four days before the test was to begin. In that period, his hosts generously supplied Godley with a 12 x 18-foot tent, a stove to keep the freezing Scottish weather at bay, and all the accouterments to construct a long horizontal Beverage antenna: 1,300 feet of wire, 12-foot long 2 x 4 poles to support it, and insulators. Godley and his British crew dug the post holes in the midst of a near-freezing gale, and laid out the wire, pointing the antenna out over the beach in the direction of Chicago. The high directionality of the Beverage significantly eliminates interference from signals from any direction other than where it is pointed. Also, it does not have to be raised terribly high off the ground, a great benefit considering the awful weather Godley encountered. Even so, two of the 12-foot poles snapped before the test was through.

Finally, at 23:30 on 7 December all was ready. Godley fired up his receiver and at 1:00 AM he began searching for signals in the 200-meter band: “Exactly 33 minutes later the universe cracked wide open! ... for an American amateur signal was piling in on us and rising in strength until at 1:42, in a very positive manner, his 60-cycle synchronous spark spelled out a message to someone that he would ‘see him later’ and plastered the call letters 1AAW where the whole world might read.” That reception of 1AAW (which turned out to be a pirate station) was just the first in a series of successful reports over the next week. The premier powerhouse U. S. station, 1BCG, not only transmitted its secret code message but even a formal traffic message, offering congratulations.



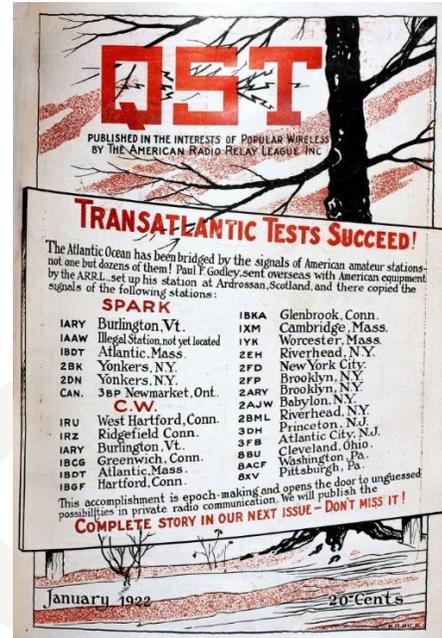
RCA was rather proud of their contribution to station 1BCG, the 960-watt powerhouse amongst the U. S. amateur stations. The crew at 1BCG included Edwin Howard Armstrong, inventor of regenerative and superheterodyne receiver circuits. Each of their four UV-204 tubes cost \$110 – quite a big investment for 1921!



Schematic diagram of the transmitter used at station 1BCG using four state-of-the-art UV-204 vacuum tubes. In this diagram, **A** indicates the oscillator tube, and **B**, **C**, and **D** comprise a three-stage parallel amplifier. The key can be seen in the middle of the diagram. The frequency of the transmission is determined by the values of the capacitor and inductor to the left of the oscillator tube. Crystal control hadn’t yet arrived.

Godley copied a few U. S. stations running spark transmitters and even more CW signals generated with vacuum tubes, including some running a mere 30-watts. The days of spark were coming to an end, with Godley's experience hastening their demise, as he noted in his official report: "C.W. is far superior, and I should like nothing better than to see all amateurs change over to continuous wave at once. Spark methods are horribly out of date, and are so inefficient, comparatively, as to be ridiculous...."

With British amateurs restricted to the 1,000-meter band and U. S. amateurs stuck up on the shortwaves, two-way communication then was impossible. However, Godley noted that, "The day is not far distant when amateurs the world over will be exchanging greetings in many languages...." That 99 years that separate us from that first transatlantic reception may seem like an eternity, but when I consider that a mere 34 years separate that event from my birth, it suddenly doesn't seem so long ago.



The QST cover from January 1922 nicely sums up the success of Godley's labors in Scotland. Only six spark stations crossed the pond while twenty CW stations came through. Note that the U. S. callsigns are not yet using the W and K prefixes. QST proclaimed the test, "epoch-making and opens the door to unguessed possibilities in private radio communication."

The entire article is available on-line, see http://www.gars.org/newsletters/2020_12_GARZETTE.pdf