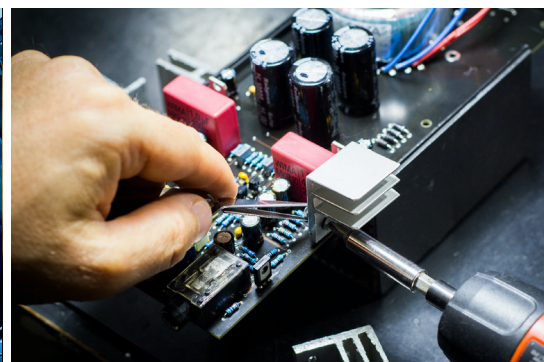
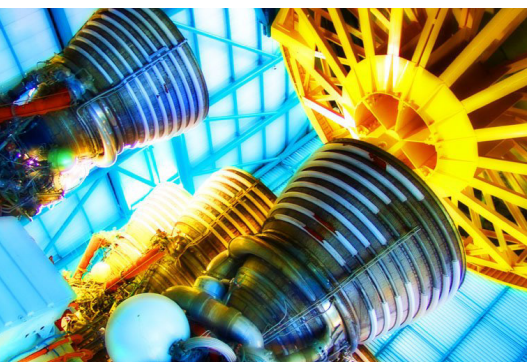




THE PULSE

SEPTEMBER 2021 | VOL. 68, NO. 7

OF LONG ISLAND



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2020 OUTSTANDING MEMBERSHIP
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Greetings again and I hope everyone had a pleasant and healthy summer, given the nature of things now. Despite the Delta variant being at large, the Section has slowly been getting back to normal. Although no in-person events are imminent, the planning continues for events in November and beyond. For instance, due to the efforts of Mort Hans and the Rocky Point History Committee, there will be a ceremony commemorating the November, 1921 inauguration of the **RCA Radio Central** site as an **IEEE Milestone**. For more on this, see the article in this issue.

The **IEEE Long Island Awards Banquet** has been rescheduled yet again for **March 31, 2022**. By then, this will all be behind us, one hopes. Coming up shortly **September 13-17** is the **2021 IEEE SPS Seasonal School on Signal Processing and Communication Systems for 5G**. Dr. Jessica Donaldson has put in a fine effort as one of the organizers bringing this international conference together.

Please keep up with the calendar for other upcoming events; schedules change rapidly in these times.

Everyone please remain healthy and well as we enter the last stages of a difficult time.

Arnold Stillman

IEEE Long Island Section Chair, 2021

THE PULSE OF LONG ISLAND



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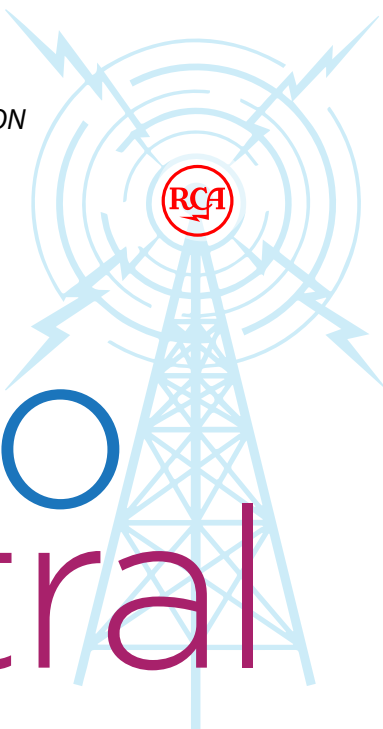


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MORTIMER HANS
 SENIOR LIFE MEMBER,
 IEEE LONG ISLAND SECTION

RCA Radio Central

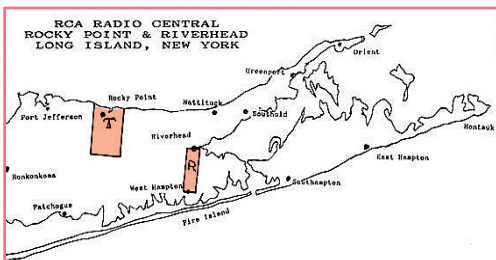


The story of how RCA Radio Central originated is also the story of how RCA came into existence, becoming the dominant electronics and communications firm in the United States for over five decades.

Even before WW1, the United States Navy began to expand in recognition of America's increased world-wide interests and of the need for communications with its fleet. By the end of WW1, the formation of RCA was seen by the War Department as the best solution to the expanding political interests of the United States, the maintaining of its dominance in international communications and the ensuring or the Navy Department's goal of reliable communications with its worldwide fleet.

Until the beginning of World War I, the primary wireless company in the United States was the Marconi Wireless Telegraph Company of America. Its primary source of business was the marine message service that provided both commercial and marine safety services for ships. It had achieved international significance and numbered 50 land stations and 400 shipboard stations staffed with personnel rented from Marconi.

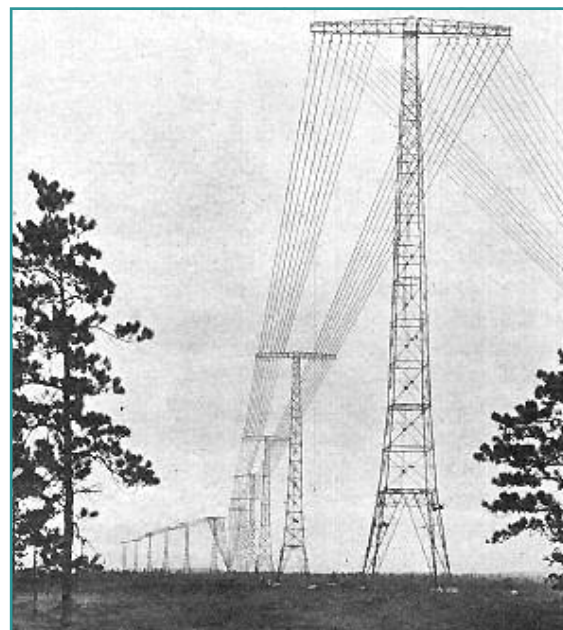
CELEBRATING THE 100th ANNIVERSARY OF THE OPENING OF LONG ISLAND'S LARGEST AND MOST POWERFUL RADIO TRANSMITTING & SPECIALLY DESIGNED RECEIVING STATION.



Look on a map of eastern Long Island and you will see two large nature preserves, the 6000-acre Rocky Point State Pine Barrens and the 2700 acre David Sarnoff Preserve. They are the remnants of

what were in 1921 the world's largest and most powerful radio transmitting station and its specially designed receiving station. The stations, Radio Central, were connected by telegraph and telephone to the main office at Broad Street in New York, 80 miles to the west. Within a few years of its opening, Radio Central became the hub of the RCA world-wide communications network.

November 5th will be the 100th anniversary of the opening of the station. It is the date planned for the milestone plaque presentation ceremony with our proposal partner, the Rocky Point Historical Society. The milestone plaque will be presented to the Rocky Point School District whose buildings are on the original site and will be inscribed: *On 5 November 1921, the world's most powerful transoceanic radio facility at the time, RCA Radio Central, was inaugurated. Located at Rocky Point and Riverhead, New York, its Alexanderson 220 kW, 18.3 kHz transmitters and Beverage long-wire receiving antennas provided reliable worldwide radio communications. In succeeding years, RCA's research laboratory also developed diversity radio reception, rhombic and folded-dipole antennas, the first transoceanic single side-band channels, and commercial facsimile service.*



CONTINUED ON PAGE 6 ►

◀ CONTINUED FROM PAGE 5

Incorporated in New Jersey and known as American Marconi, it was a subsidiary of a British company. It was also the only company capable of handling commercial transatlantic communications. In order to keep the technology in American hands, the General Electric Corporation, with the assistance of the US Navy Department, took over the company. The new company was incorporated in the state of Delaware on October 19, 1919, as the Radio Corporation of America (RCA).

RCA received the American Marconi patents and its high-powered stations. Its articles of incorporation prohibited the election of directors who were not U.S. citizens and permitted participation by the United States government in the administration of the corporation's business. Edward Nally, who had been President of American Marconi was elected Chairman of the Board and David Sarnoff who succeeded him, became Managing Director.

The new company's primary business objectives at its founding were to be the dominant provider of worldwide wireless commercial communications, to provide equipment and services for seagoing vessels and to compete with the undersea cables by offering improved reliability. To provide the worldwide service the company soon undertook a massive project to build a "Radio Central" transmitter center at Rocky Point which together with its receiving station at Riverhead and central office in New York City would achieve the vision of communication engineers to transmit messages to all points of the world from a single centrally located source.



RCA Radio Central Transmitter Facility

Although advanced versions of vacuum tubes were already being used by ham radio operators, experimenters and some broadcasting stations at the lower frequencies, the very low frequencies of Alexanderson Alternators, were preferred for reliable long distance higher power transmissions. In 1923, Alexanderson proposed the advantages of long wave radio propagation over that of short waves, even given the advantages of short-wave transmission. As part of the formation of RCA, ownership of Marconi's two high power Alexanderson Alternators was transferred to RCA and became the basis of its global reach, employing twelve directional transmitters planned for Radio Central.

There were two sites for the long antennas required for the very low frequency operation of the Alexanderson alternator operation at 18.3KHz and the long wire Beverage antennas, one of 7000 acres at Rocky Point and another of 2000 acres at Riverhead. Only remnants of the original massive steel antenna towers remain. Construction began in July, 1920 for a central building to house the offices and the huge Alexanderson transmitting alternators.

Twelve transmitting antenna systems were planned, arranged in a spoke pattern around the central building. The steel antenna towers would be 410 ft high with a 150 ft. crossbar. They would be



1260 ft. apart and with each antenna 2½ miles long, they required 25 miles of strung wire and 225 miles of buried copper wire for the counterpoise grounding system. Only two of these massive antenna systems were erected. With the continued development of vacuum tubes, the shift to shortwave frequencies with their longer distance propagation characteristics, smaller antennas and lower power transmitters was beginning. Nonetheless, the high cost of the Alexanderson alternators might well have been the demise of Radio Central and RCA had RCA not recognized the coming displacement of longwave technology.

TCA Radio Central started operations on November 5th, 1921, when President Harding pressed a button in the White House, activating the first of the two 200KW Alexanderson alternators to send a worldwide Morse Code message of comity using the RCA relay network. This marked the first radio message to be sent by a U.S. president and confirmations arrived at the Riverhead receiving site from 17 countries, including Japan and Australia. Here are some excerpts from the first worldwide radio broadcast by the President: "To be able to transmit a message by radio in expectation that it may reach every radio station in the world is so marvelous a scientific and technical achievement as to justify special recognition. It affords peculiar gratification ... may be received in every land... with whom our nation is at peace ... That this happy situation may ever continue, and the peace which blesses our own land may presently become the fortune of all lands and peoples, is the earnest hope of the American nation."

For more than 70 years RCA Radio Central subsequently not only provided reliable world-wide radio communications but developed diversity radio reception, performed the first high-power vacuum tube experiments, established the first transoceanic SSB channels, developed rhombic and folded-dipole antennas and the first transoceanic FAX service.

Mortimer Hans is a IEEE senior life member, past IEEE History and current Associate History Committee member. He is the proposer for two of the four L.I. Section's Milestones and is a volunteer engineer responsible for the Cradle of Aviation Museum's simulator exhibits.

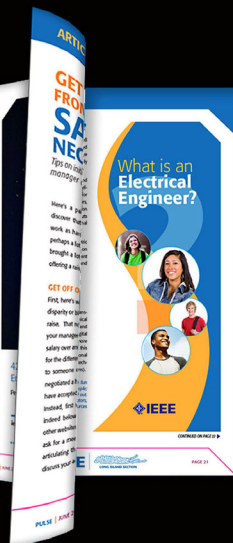
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20th of a month for the next month edition.

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The Long Island Power Electronics Symposium and Exhibits is the area's premier annual event that brings together the local power electronics community.

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The IEEE logo (a diamond with a Greek letter phi) and the text "IEEE" are positioned above a stylized map of Long Island. Below the map, the text "LONG ISLAND SECTION" is written.

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SEPTEMBER 13

LOW-DENSITY PARITY CHECK (LDPC) BASED ADVANCED ERROR CORRECTION CODING and 5G
8:00 AM - 12:00 PM

SEPTEMBER 15

GPU ACCELERATION FOR 5G SIGNAL PROCESSING and MACHINE LEARNING
8:00 AM - 12:00 PM

SEPTEMBER 16

BUILDING LOW LATENCY and LOW POWER SMARTCITY APPLICATIONS
8:00 AM - 12:00 PM

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LET US HEAR FROM YOU.

Send your article to: pulse@ieee.li
Life Member Chair: life@ieee.li

The **IEEE Long Island Section** has held meetings with many of our Life Members and Senior Engineers, in recent months. Your stories and histories in engineering are interesting, inspiring and should be recorded for future generations. You have served your profession for many years, many have served our country in the military, many as engineers fighting the Cold War. The many contributions are the legacy to this new digital age, space age, environmental age and beyond.

WANTED: IEEE LIFE MEMBER NEEDED TO VOLUNTEER TO SUBMIT A MONTHLY HISTORY ARTICLE FOR THE PULSE

The **PULSE** is seeking a IEEE LI Life Member to write the *Long Island Electrical & Electronic History* monthly article for the **Pulse**. If interested contact pulse@ieee.li

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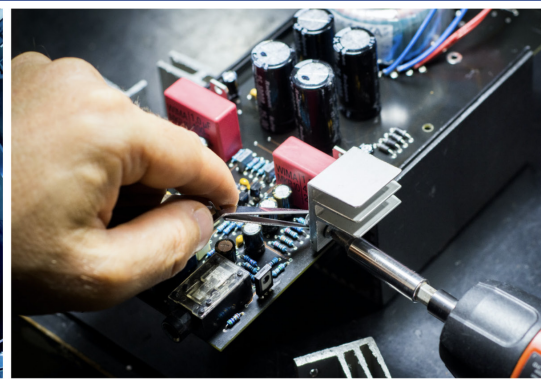
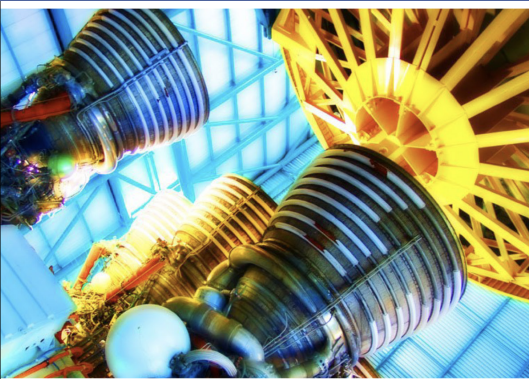
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