

# **MOUNTAIN SPARK GAPS**

**NPARC—The Radio Club for the  
Watchung Mountain Area**



**Website: <http://www.nparc.org>  
Club Calls: N2XJ, W2FMI  
Facebook: New Providence Amateur Radio Club  
(NPARC)**

**VOLUME 50 NO.10 October 2015**

## **UPCOMING EVENTS**

### **Regular Meetings**

**11/8 & 11/23  
Monday 7:30  
NP Community Center**

**Holiday Luncheon  
12/5/15**

**Kids Day 1/3/16  
Check Website for details as they  
become available.**

## Meeting Schedule

**Regular Meeting:** 7:30—9:00 PM  
**2nd Monday of each month** at the  
NP Senior & Adult Center  
15 East Forth Street  
New Providence

**Informal Project Meeting:** 7:30—9:00  
PM

**4th Monday of each month**  
**Same location**

**Everyone is Welcome**

If a normal meeting night is a holiday,  
we usually meet the following night.  
Call one of the contacts below  
or check the web site

## Club Officers for 2015

President: KC2WUF David Bean  
973-747-6116

Vice President: K2UI Jim Stekas  
973-377-4180

Secretary: KD2EKN Tim Farrell  
908-244-6202

Treasurer: K2YG Dave Barr  
908-277-4283

Activities: W2PTP Paul Wolfmeyer  
201-404-6914

## —On the Air Activities

### Club Operating Frequency

145.750 MHz FM Simplex

### Sunday Night Phone Net

Murray Hill Repeater (W2LI) at 9:00 PM  
Transmit on 147.855 MHz  
With PL tone of 141.3 Hz  
Receive on 147.255 MHz  
Net Control K2AL

### Digital Net

First & Third Mondays 9 PM  
Details as announced.

## Club Internet Address

Website: <http://www.nparc.org>  
Webmaster K2MUN David Berkley  
Reflector: [nparc@mailman.qth.net](mailto:nparc@mailman.qth.net)  
Contact K2UI, Jim

## MOUNTAIN SPARK GAPS

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Contributing Editors:

WB2QOO Rick Anderson

WB2EDO Jim Brown

Climatological Data for New Providence  
for September 2015

The following information is provided by  
Rick, WB2QOO, who has been recording  
daily weather events at his station for the  
past 34 years.

### TEMPERATURE -

Maximum temperature this September, 93 deg.  
F (September 8)

Last September (2014) maximum was 91 deg.  
F.

Average Maximum temperature this September,  
79.3 deg. F

Minimum temperature for this September, 51  
deg. F (September 27)

Last September (2014) minimum was 44 deg. F.

Average Minimum temperature this September,  
60.2 deg. F

Minimum diurnal temperature range, 14 deg.  
(83-69 deg.) 9/4; (78-64) 9/11;

(72-58) 9/22; (82-68) 9/29

Maximum diurnal temperature range, 26 deg.  
(88-62 deg.) 9/7

Average temperature this September, 69.8  
deg. F

Average temperature last September, 66.7  
deg. F

### PRECIPITATION -

Total precipitation this September - 4.03"  
rain

Total precipitation last September - 1.55"

Maximum one day precip. event this Septem-  
ber; September 30, 1.58" rain.

Measurable rain fell on 6 days this Septem-  
ber, 9 days last September.

=====

Rick Anderson

10/13/15

243 Mountain Ave.

New Providence, NJ

(908) 464-8912

[rick243@comcast.net](mailto:rick243@comcast.net)

**Lat = 40 degrees, 41.7 minutes North**

**Long = 74 degrees, 23.4 minutes West**

Elevation: 380 ft.

CoCoRaHS Network Station #NJ-UN-10

## **HOLIDAY LUNCHEON**

December 5th, at the same location as last year: Chimney Rock Inn, immediately to the west side of the bridge just inside Gillette from Berkeley Heights on Valley Road (Springfield Ave in Berkeley Heights).

Here are the choices for entrees. **You do not choose now; orders are taken at the tables.**

Chicken Française w/Linguine,  
Sliced Steak w/French Fries  
Chicken Parmesan w/Linguine,  
Capellini Monaco w/Shrimp (capellini is very thin spaghetti),  
Penne in Vodka Sauce

A variety of pizza appetizers is included, as is unlimited soda, coffee and tea. We've kept the cost to the same as last year by omitting dessert. The cost is \$28 per person. Liquor, beer and wine are the responsibility of each attendee.

We do need to know how many will be attending by Thanksgiving, so don't delay. Please bring a check made to NPARC for \$28 (times how many your party includes) to the next meeting or two, or mail same to me at 29 Montrose Ave, Summit, NJ 07901. Questions via e-mail or my cell phone, 908-403-0877.

Dave Barr, K2YG  
Treasurer, NPARC

## **FACEBOOK**

**Do you know that NPARC has a FACEBOOK Page?**

**It is NPARC**

**Thanks to Cameron Hall, KB1IRS**

## **The Babe Ruth of Radio**

Jim Stekas - K2UI

More than 100 years after the birth of radio, the credit for its invention is still a matter of debate. Marconi is generally given credit (rightfully I think), but reasonable arguments are also made in favor of Hertz, Maxwell, and Tesla. One thing that can be said for certain is radio as it existed a century ago is all but unrecognizable to a modern ham. The Marconi radio on the Titanic looked more like a small moonshiner's still than a radio.

The man most responsible for advancing the radio art into the modern age was Edwin Armstrong. A brilliant loner, Armstrong experimented with De Forest's audion while a student at Columbia. The name "audion" derived from its ability to amplify audio signals (very important to the telephone company). He discovered that it could amplify RF as well (something De Forest thought impossible), and could be made to oscillate by using positive feedback. By reducing the amount of "regeneration" just below the point of oscillation, the audion functioned as a radio detector many orders of magnitude more sensitive than a galena crystal. In one stroke of brilliance Armstrong had created a CW signal generator and a regenerative detector to receive it.

In 1913, 23 year old Edwin Armstrong visited the Marconi site in Wall, NJ to demonstrate his regenerative receiver to David Sarnoff, an up and coming manager in the Marconi company. Signals that couldn't be heard at all on the Marconi receiver could be easily copied with the Armstrong's regenerative receiver even with the "cans" on the table. A partnership began that would make both men very rich, and ultimately end tragically.

During WWI, Armstrong granted the government free license to his patents. As a captain in the Signal Corps he was sent to Paris where he helped improve military wireless systems. His war research culminated in 1918 with the invention of the superheterodyne receiver. By 1920, Armstrong had produced the critical advances that killed spark, launched the radio broadcasting industry and put a radio in every home in the U.S.

During the 1920's Armstrong used his wealth to fund his independent research in his attic laboratory. He watched from the sidelines as an army of corporate lawyer's battled over the his patents. For Armstrong, the suits were a matter of personal pride, not money, as they were owned largely by RCA. For David Sarnoff, the president of RCA, it was only about the money. RCA was frequently on both sides of a lawsuit, suing to invalidate patent A in favor of patent B even though it owned both patents! The goal was to maintain licensing revenue by extending the period of exclusivity.

Meanwhile, back in the lab, Armstrong was busy tackling the problem of static, particularly the crashes caused by summer thunderstorms miles away. His approach was to invent a modulation scheme that would be immune to large changes in signal amplitudes, FM. Armstrong received a patent on wideband FM in 1933. Sarnoff invited him to join RCA where he conducted the first over-the-air tests of FM using a transmitter in the Empire State Building. The results were an amazing success, demonstrating a clear superiority in audio quality and noise immunity over AM.

Sarnoff's interest in FM had nothing to do with radio. It was as an ideal solution for the audio channel in the a television system being developed at RCA, and Sarnoff want to buy it. But Armstrong was determined to retain ownership of his invention and would only agree to license it. Sarnoff was unable to make Armstrong "an offer he couldn't refuse".

Armstrong received an experimental license, W2XMN, and built a 40kW transmitter and large antenna tower in Alpine, NJ at his own expense. By late 1937, W2XMN was on the air at 42.8 Mcps with a signal that could be heard 100 miles away. The FCC assigned the 42-50 MHz for FM broadcast and Armstrong began building FM receivers.

At RCA, the push was on to have TV ready for demonstration at the 1939 World's Fair, followed by commercial sales of TV sets. Since he couldn't own the FM patent rights, Sarnoff decided to violate them outright. RCA acquired a collection of me-too FM patents with the intent of tying Armstrong up in court until he ran out of money, or died. After the war, RCA began the full commercialization of TV broadcasting. Using his D.C. Connections (and with the approval of the ARRL), Sarnoff convinced the FCC to move the FM broadcast allocation to 88-108MHz. All existing FM equipment was instantly made obsolete when the old FM band became TV channel 1. Although it would never carry a single program, channel 1 was an important arrow in Sarnoff's quiver.

The legal battle between RCA and Armstrong raged through the early 1950's, dissipating Armstrong's wealth and his mental health. On Jan 31, 1954 Armstrong stepped out of the window of his 13<sup>th</sup> floor apartment. His body was found the next morning, as was a despondent and apologetic suicide note. On hearing the news, Sarnoff is reported to have said, "I didn't kill Armstrong." It was claim he felt compelled to volunteer for the rest of his life.

Armstrong's wife Marion inherited his depleted estate and legal battles. She adopted a new and effective legal strategy, turning her focus to Europe where she settled lawsuits on favorable terms in exchange for acknowledgment of the priority of Armstrong's FM patents. With the additional funds an supporting affidavits she was able to prevail in the U.S. Courts, reestablishing Armstrong's wealth and reputation. (Marion was Sarnoff's secretary when she met Edwin, and it may have been she learned how to play hardball at RCA.)

Patents are legal documents with some technical content. As Armstrong once said (I paraphrase), "Lawyers reduce real things to words, and then they just talk about the words." Patents serve not so much to protect the inventor as to provide a basis for court battles. Unless you have the deep pockets needed to defend a patent, it will be of little value. And if you have deep enough pockets, even a garbage patent may be all you need to win a big settlement from a large corporation.

#### References:

The definitive book on Armstrong, Sarnoff, De Forest and the development of early radio is "Empire of the Air".

## SCIENTIFIC TIDBITS

### **Snowstorm's End**

Inside a deteriorating hangar at the Baikonur Cosmodrome sit a pair of derelict spacecraft, built by the Soviet Union as part of a bold challenge to the U.S. manned space program. Only weeks before NASA's return to manned spaceflight in September 1988, more than two years after being grounded in the wake of the Challenger disaster, the Soviet space agency released photos of its own space shuttle. Named Buran ("snowstorm" in Russian), it looked almost identical to the American shuttle. On November 15, 1988, Buran orbited Earth twice and made a nearly perfect landing without any humans on board. Money dried up after the Soviet Union's collapse in 1991, however, and it never flew again. Both shuttle programs are now defunct, and the remaining U.S. shuttles are on display in museums. Buran was destroyed in a 2002 building collapse at Baikonur; its siblings never left Earth. One was a non-flying replica used to test equipment. The other, dubbed Ptichika ("little bird" in Russian), was nearly 95 percent complete and intended for spaceflight. Ironically, the humble Russian-built Soyuz spacecraft, operational since the '60s, outlasted both programs and is currently the only ride for U.S. and Russian astronauts to reach the International Space Station. It is a real shame that the U.S. space program has been relegated to a low priority by Washington in order to add support to the current batch of wasteful pork-barrel social programs. Our society has benefited mightily from the discoveries of the past space program and, I am positive, that we could again, if our government could stop playing politics and once again sufficiently fund the space program.

## **Heartbeats Power Pacemaker**

Current pacemakers need to be replaced every 5-7 years when their batteries run out. As patients live longer, the replacement surgeries become expensive and invasive and increase the chances of the patient dying during the procedure. Any kind of invasive surgery presents a degree of danger that increases substantially as we grow older. But now researchers at the University of Michigan have created a device that harvests energy from the beating heart and turns it into energy to power a pacemaker. The energy harvester is half the size of the current pacemaker batteries and the heart can produce 10 times the power needed to run a pacemaker. The scientists believe heartbeats can power other cardiac devices like defibrillators. This is quite a breakthrough and hopefully will come to market soon after it navigates the bureaucratic jungle. I was asked by an astute individual, "what happens to the pacemaker if the heart stops as it no longer gets any power?" I pointed out to him that since the individual would then be dead it really didn't matter; and this guy votes. Oh boy!

Jim WB2EDO