

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 51 NO.1 January 2016

UPCOMING EVENTS

Regular Meetings

**2/8 & 2/22
Monday 7:30
NP Community Center**

**NPARC AUCTION
See Inside**

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
Contact K2UI, Jim

MOUNTAIN SPARK GAPS

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WB2QOO Rick Anderson

WB2EDO Jim Brown

K2UI Jim Stekas

Climatological Data for New Providence
for November 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 November, 74 deg. F
(November 6)

Last November (2014) maximum was 69 deg.
F.

Average Maximum temperature this November,
57.2 deg. F

Minimum temperature for this November, 24
deg. F (November 24)

Last November (2014) minimum was 17 deg. F.

Average Minimum temperature this November,
37.9 deg. F

Minimum diurnal temperature range, 7 deg. (56
-49 deg.) 11/10

Maximum diurnal temperature range, 29 deg.
(57-28 deg.) 11/26

Average temperature this November, 47.6 deg.
F

Average temperature last November, 40.9 deg.
F

PRECIPITATION -

Total precipitation this November - 2.47"
rain

Total precipitation last November - 4.67"
rain/melted snow; 3.0" snow

Maximum one day precip. event this November;
November 19, 1.88" rain.

Measurable rain fell on 6 days this Novem-
ber, 8 days last November.

=====
Rick Anderson
12/27/15

243 Mountain Ave.
New Providence, NJ
(908) 464-8912

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

-10

OPPORTUNITY KNOCKS

**Clean out the Shack
Clean out the Shop
Clean out the Basement
Clean out the Garage
and**

**Bring all that valuable stuff you will
never use to the**

NPARC AUCTION and Flee Market

New Providence High School Cafeteria

**35 Pioneer Drive
Friday February 19**

**See <http://WWW.NPARC.ORG>
For additional information**

Kid's Day was held on January 3.
Here are some pictures.



Vaani KC2SPJ, acting as Mentor and Control Operator for Brian Zellhofer as he looks around on 20 meters for a Kids Day call. Another young candidate waits patiently for his chance to get



Vacuum Valley: Boonton, New Jersey

Jim Stekas - K2UI

New Jersey's contributions to technical R&D are staggering, far out of proportion to our size and population. The development of the telegraph in Morristown by Morse and Vail kicked off a revolution in telecommunications. Thomas Edison, a young telegraph operator, devoted himself to electrical invention and created the first R&D lab in Menlo Park, NJ. Edison gave the world the electric light, generators to power it, and host of other inventions. One the most important, and least appreciated, was the carbon microphone that enabled the Bell System to send signals between towns and cities. And that brings us to Bell Labs in Murray Hill which gave us coaxial cable, waveguide, the transistor, communication theory, radio astronomy, the cosmic microwave background, digital communications, lasers, fiber optics, Unix, and ultimately NPARC.

Less well known is how Boonton became the “silicon valley” of early radio, or more accurately the “vacuum valley”. The Boonton ball got rolling in 1922 with the founding of Radio Frequency Labs (RFL) that looked to cash in on the nascent radio industry. RFL did not build radios. Their focus was on developing and manufacturing radio components to supply radio manufacturers. RFL became a leader in radio technology and developed a valuable collection of radio patents.

At the same time that radio was blowing up in the 1920's, so was the aviation industry. RFL produced the first aviation radios for the booming fleet of mail transport planes. The aviation market grew quickly and RFL built their own airfield next to R&D lab to test their new products. Jimmy Doolittle moved into an office in the RFL lab to shepherd through the development and testing of a new radio navigation system. In 1928, he made the first blind instrument landing at Boonton. The official demonstration for the public happened at Roosevelt Field on Long Island followed shortly after.

RFL's aviation radio business had grown so large that a subsidiary was created: the Aircraft Radio Corporation, ARC. During the 1930's ARC designed and built radio and navigation equipment for military aircraft. By the time WW2 broke out, ARC dominated the military aviation radio market.

Aircraft radio equipment is very different from ground based systems. It is compact, light-weight, runs on 24VDC, and is a collection of interconnected components distributed throughout the plane. The plane's radios were operated using a remote controls connected to the radio by wires (electrical) and cables (mechanical). A single engine plane is no place for the likes of a 45lb SX-28, and Hallicrafters, National and Hammarlund had nothing in their product lines ready for the skies.

If you had a ham ticket in the 50's or 60's the letters ARC should be setting off alarms in you head. The legendary AN/ARC-5 Command Radio System was designed by ARC and included RX/TX elements covering from 190kHz to 150MHz. ARC-5 components found their way into everything from P-51 fighters to B-29 bombers. The heart of the ARC-5 system were the command set receivers (R-xx/ARC-5) and transmitters (T-xx/ARC-5) where the “xx” is a number corresponding to the frequency covered. There was no such thing as band switches on these “command sets”, you switched between receivers and transmitters to change band!

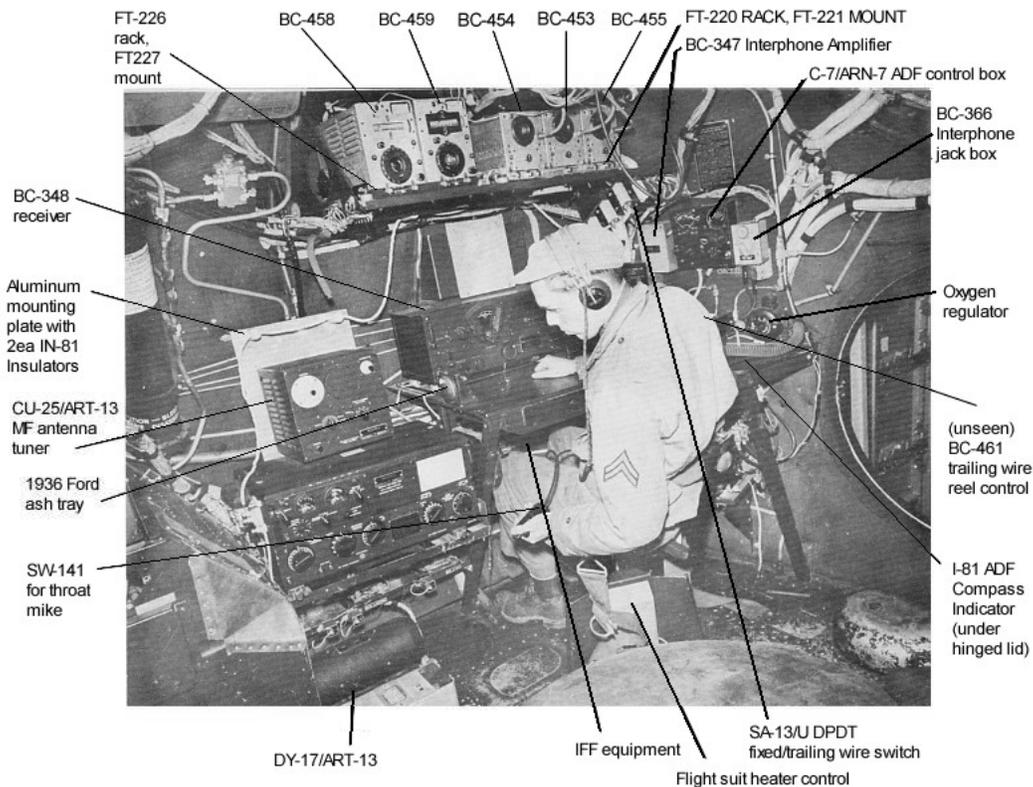
During WW2, approximately one million ARC-5 system elements were produced. Early sets were manufactured by ARC, but the bulk of them came out of Western Electric. At the end of the war ARC-5 command sets flooded the surplus market and hams gobbled them up at \$5-20 apiece, depending on condition and frequency coverage. An R-27 and T-22 covered 7-9MHz and got many novice hams on the air on 40m with some help from an Elmer. QST had countless articles on modifying command sets to work on 120 VAC power and improve their performance and ergonomics as a ham rig. In 1957, CQ magazine published a 140 page book (downloadable in PDF) loaded with applications for surplus command set. To this day, it is hard to go to a hamfest and *not* see an ARC-5 command set or two.

It would be nice to be able to say that the “ARC” in AN/ARC-5 is an acronym for Aircraft Radio Corporation, but there is no official confirmation of that. I have seen reference to “Airborne Radio Communications” but I suspect that may have been a fig leaf concocted so as not to offend other radio manufacturers.

The Aircraft Radio Company is no longer operating in Boonton, but the old facilities and airfield dating back to the days of Jimmy Doolittle remain. Cessna acquired ARC in 1959 and the days of technical leadership were officially relegated to history. ARC was bought by Bendix in 1983 and then by Sigma-Tek which picked up ARC's business supplying avionics to Cessna.

Although ARC is gone, its parent, Radio Frequency Labs still survives in Boonton. After the big blackout of 1965 they changed their focus to developing control technology for the power industry and now operate as RFL Electronics.

Below is a picture of a B-29 radio position (from <http://aafradio.org/>) showing a large collection of AN/ARC-5 elements.



SCIENTIFIC TIDBITS

Superbug Defies Antibiotics

Bacteria that can resist even the most powerful antibiotics are infecting livestock and people in China, raising the grave possibility that untreatable diseases could spread around the world. These superbugs are especially worrying because they have a mechanism that transfers drug resistance to other strains of bacteria. If their resistance spreads, it could trigger an antibiotic apocalypse, leaving doctors helpless to treat deadly infections. Until now, drug-resistant bacteria have remained susceptible to an antibiotic called colistin. But apparently this “last resort” drug has been so overused on livestock that some bacteria have developed a mutant gene to resist it. Researchers in China discovered the gene, known as MCR-1, in pigs and found that it had spread to a handful of hospital patients. What makes the mutation especially dangerous is that it is found on plasmids, DNA molecules that move freely between different bacterial strains. By riding on plasmids, the resistance gene can readily pass between common bacteria, such as E-Coli that cause pneumonia and bloodstream infections. Microbiologists warn that it may only be a matter of time before universal drug resistance is widespread and existing antibiotics are obsolete. This obsolescence is not going to happen overnight, and the number of infections that can only be treated by colistin is still relatively small, but this situation highlights the urgent need for new treatments for these organisms and the limited time that we have to develop them. This is a scary situation that has been given off warning signals for some time. Now it seems that medical research institutions should be in high gear to solve this pending medical tsunami.

A Ring in Mars’

Future Sometime in the next 40 million years, Mars may look a lot like Saturn, surrounded by a shimmering ring. Gravity is pulling the Red Planet’s largest moon, Phobos, ever closer, putting the two celestial bodies on a collision course. But instead of a massive impact, new research suggests that the force of Mars’ gravitational tug will stress the moon to the breaking point - indeed, fissures have already appeared on its surface. Once Phobos gets within about 3,400 miles of Mars, it will burst apart, forming a ring of remnant particles that will swirl around the planet. Debris from that ring will rain down on Mars for some 100 million years until the ring disappears completely. This author does not think that this piece of research is cause for panic.

Women Drinking

Men generally drink more alcohol than women, but the gender gap is shrinking, a new governmental study has found. Males still consume more alcohol, but the differences between men and women are diminishing. Between 2002 and 2012, the percentage of women who reported having an alcoholic drink in the past 30 days jumped from 45% to 48%, while the percentage of men fell slightly, to 56%. It was found that women also imbibed more frequently, drinking 7.3 days per month on average, up from 6.8 days. Men, on the other hand, were down from 9.9 drinking days per month to 9.5 days. Among college students, more women admitted bingeing on five or more drinks in a row. Clearly this is not an area where women should be seeking gender parity. The female body takes longer to metabolize alcohol, making women more vulnerable to the ravages of heavy drinking, including liver inflammation, heart disease, and cancer. Since this information is fairly well documented, all you “guys” out there better start checking your liquor cabinets.

Jim WB2EDO