



# HARMONICS

1916

South Jersey Radio Association

2020



## President's Message

Ken- K2WB

Sadly, March Madness did not happen this year! We live in extraordinary times with self-quarantining, 6-foot rule etc. Still we trudge forward.

Spring Weather brings flowers, rain and thunderstorms. Remember to keep all your antennas and gear lightning safe.

At this point of uncertainty, we can still depend on our grand hobby to see us through. The COVID-19 virus has impacted everyone in one way or another. A lot of radio clubs have suspended their meetings. I know of several that conducted their meetings through their repeaters. We (the SJRA) pulled together a large WebEx meeting in short order. It was not our originally scheduled program. But, through our efforts we were able to have 38 members join the web meeting. I want to thank Rick, W2JAZ for putting together a fantastic FT8 presentation in short order. In additional I want to thank all that checked into the meeting. Let's go for 50 members or more.

The Wednesday April 29<sup>th</sup> General Membership meeting will be done the same way. As in March, I will host two practice WebEx sessions prior to the meeting to work out the kinks of getting online. All meeting information will be sent on the SJRA email list, please look for it there. In short, the meeting

location WebEx and the time would be 7:30 PM.

As a reminder, we do not have access to the Gibson House for our meetings. This is temporary and will change as our world goes back to normal.

Field Day will be here before we know it. Because of current circumstances we are not certain on how it will be done in any case the club will need your help to succeed. Contact a band captain or myself if you want to help and be part of the success of the SJRA!!

For more than 20 years the SJRA has been holding a radio sport contest within a radio sport contest. The winner would get a plaque from the SJRA if three logs are submitted for a particular contest in the same category / class, and the South Jersey Radio Association is listed as the affiliated club with the club sponsor.

For now, please practice social distancing, wash your hands thoroughly with warm water and soap for at least 20 seconds, wear a mask when out in public places, etc. Be safe and use common sense.

Please listen to both repeaters to see if anyone needs help or supplies.

That is all for now,

Be safe!!

QRB 6ft

73's de Ken K2WB

## SOUTH JERSEY RADIO ASSOCIATION

HARMONICS is published monthly and is the official news letter of the South Jersey Radio Association. The SJRA was established on June 16, 1916 and has been meeting continuously since its inception. The club has been affiliated with the American Radio Relay League since 1920.

The SJRA meets each month on the fourth Wednesday, January through September; and usually the third Wednesday, October, November and December; in one of the Meeting Rooms of the Gibson House at 525 East Main Street, Marlton, NJ 08053. Visitors are always welcome at our general meetings. **“Our Meetings are Smoke Free”**

SJRA operates the K2AA Repeater (145.290 - PL 91.5) located in Medford, NJ and the K2UK Repeaters (146.865 and 442.350 - PL 131.8) located in Pine Hill, NJ. The repeaters are open for use without restriction to all licensed amateur operators.

There are currently over 100 SJRA members active in most all aspects of amateur radio. Membership is by application and is subject to the approval of the Board of Directors. Club dues are currently \$30/yr. for memberships, \$22.50/yr. for retired-person membership (62 plus 1 yr. membership), and \$15/yr. for additional family members and student membership. Membership information is available on the SJRA website: [www.sjra.org](http://www.sjra.org) or from Art Arnold, N2CPR, Email: [membership@sjra.org](mailto:membership@sjra.org). SJRA's web page: [www.sjra.org](http://www.sjra.org)

SJRA VE Team: [ve@sjra.org](mailto:ve@sjra.org) is the SJRA/ARRL VUCC card checker

Joe Fisher, KC2TN, is the SJRA/ARRL WAS card checker

\*\*\*\*\*  
 ★ Harmonics is now available for SJRA members on the WEB in pdf ★  
 ★ format at: <http://www.sjra.org> ★  
 ★ South Jersey ARRL Section News is available on the WEB at: ★  
 ★ <http://www.arrl.org/Groups/view/southern-new-jersey> ★  
 ★ \*\*\*\*\*

**Officers:**

**President:** Ken Botterbrodt, K2WB  
**Vice Pres.:** John Doran, W2FDJ  
**Treasurer:** Roy Herman, WB2EOD  
**Rec. Sec:** Carl Hyde, W2CSH  
**Cor. Sec:** Dennis Cioffi, AC2FO

**Directors:**

Art Arnold, N2CPR  
 Tony Canuso, N2ATB  
 Holden Correia-Fisher, KD2JVP  
 Matt Grohans, N2IDW  
 Rick Lawn, W2JAZ  
 Frank Longbottom, AA2AW  
 Al Witner, N3AVT

**Committees:**

**Historian:** Mark Walters, KD2JPW  
**Membership:** Art Arnold, N2CPR  
**Field Day:** Ken Botterbrodt, K2WB  
**Contests:** John Doran, W2FDJ  
**Repeater:** Robert Sunbury, K2UQ  
**Programs:** Carl Hyde, W2CSH  
**H&W:** Roy Herman, WB2EOD; and Dara Herman, KC2THQ  
**Awards:** **Vacant (Please Volunteer)**  
**Hospitality:** Jean Priestley, KA2YKN  
**Nets:** Matt Grohans, N2IDW  
**Publicity:** John Johns, KD2RKA  
**Picnic:** **Vacant (Please Volunteer)**  
**Ways & Means:** Roy Herman, WB2EOD  
**Property:** Frank Longbottom, AA2AW  
**Web Site:** Ira Weinstein, W2IRA  
**Harmonics Staff:**  
**Publisher/Editor:** Al Ziegler, KD2ST  
**Alternate Editor:** Ted Groke, N8MP  
**Circulation:** Jim Vecchiola, KR2T

### LOCAL WEEKLY NETS

Mondays FM Net	K2AA Repeater, PL: 91.5	145.290 @ 8PM
Fusion on 2 <sup>ND</sup> & 4 <sup>TH</sup> Thurs.	K2AA Repeater, DN mode	145.290 @ 8PM, Fusion
6M SSB on 1 <sup>st</sup> Thurs.		50.150 MHz USB @ 8PM
2M SSB on 3 <sup>RD</sup> Thurs.		144.260 MHz USB @ 8PM

### Harmonics Deadline

Articles submitted for the next Harmonics will be accepted until Monday, May 11, 2020. Email:

[harmonics@sjra.org](mailto:harmonics@sjra.org)

**SWAP SHOP** - For Sale/Wanted ads are free of charge and are accepted for Amateur Radio related items only. While ads are not restricted to SJRA members, there is only limited space available and members have priority for listings. No items will be accepted for inclusion in the Swap Shop from commercial vendors or traders. All ads must be submitted at least three weeks prior to the scheduled SJRA general meeting date.

**GENERAL ADVERTISING** - Limited commercial advertising is accepted on a space available basis. Annual advertising rates range from \$25/yr (Min 1/8 page) to \$200/yr (Full Page). Information is available from Ken Botterbrodt, K2WB.

## Meeting Minutes

### March 4, 2020 Board Meeting Minutes

The meeting was called to order at 7:02 by Ken, K2WB.

The meeting opened with a discussion of the repeaters requested by John Fogleboch, WY2J.

John, WY2J expressed his concerns as to the long-term plan for the repeaters (K2AA and K2UK). The major concerns were the nets and integrating the two repeaters together. Ken, K2WB addressed John's concerns by proposing that a study and a plan with goals and budgets be undertaken to state where we are and where we are going and the path to get there. John suggested that the arrangement and scheduling of the nets be enhanced by having more fusion nets during the month. Ken expressed that this would be contingent on getting the K2UK repeater on Wires-X with the addition of an ethernet connection. Ken and the board agreed that a plan with objectives and a schedule should be created.

#### Treasurers Report - Roy WB2EOD

Roy, WB2EOD presented the treasurer's report. Roy stated that he was prepared to send refunds to those who signed up for the Hamvention bus trip. Art motioned that refunds be made, this was seconded by Frank AA2AW.

A second motion was made for the record that the bus trip be cancelled. The motion was made by Tony, N2ATB and seconded by Rick, W2JAZ.

#### MEMBERSHIP - Art, N2CPR

Art presented two new fully paid members, Bret Johnson, KE8DAC and Dan Kappler, KA2PPL. Carl, W2CSH motioned that they be approved and was seconded by Art, N2CPR.

#### HARMONICS - Al, KD2ST

Al stated that a notice for final membership dues will be put on the front page of the next Harmonics.

#### WEB SITE - Ken, K2WB

Ken stated that the final discussions of the Web site administration were scheduled, and that Ken will initially spearhead the overhaul of the club's web site.

#### CONTESTS - John, W2FDJ

John discussed upcoming contests and will have the schedule available to members.

#### Publicity - John, KD2RKA

John stated that the club Facebook Page had over 130 subscribers with excellent content.

#### Programs - Rick, W2JAZ (outgoing)

Rick reported that due to the increasing seriousness of the Covid-19 situation that he would contact Joe Taylor to see if he wants to reschedule.

This concluded the executive meeting.

In conclusion of the executive session Ken, K2WB stated that he would prepare to have the March meeting as a virtual meeting using WebEx. Notice would be given to the membership well in advance of the meeting

*(Continued on page 6)*

### April's Meeting Presentation

Rick, W2JAZ

We are honored to have at our April General Meeting a special presentation on **Getting Started on EME with Focus on 432 and Higher Bands** presented by Dr. Alan Katz, K2UYH

Most hams think EME takes big antennas and high power. This talk will show how you can get started with small antennas and relatively low power. EME is even possible from an apartment balcony. All aspects of EME including choice of band, operating modes, equipment, antennas, Moon tracking and polarization, Doppler, and more.

Bio: Al (K2UYH) has been a radio amateur since he was a teenager with an interest in the UHF/microwave frequencies and Moonbounce. He completed the first WAC above 144 MHz in 1976, on 432 the second WAS, and on 432 and 1296 the third DXCC. He has also completed WAC on 23 thru 3 cm. He has been editor/publisher of the "432 and Up EME Newsletter" for more than 45 years, before that he edited the VHF column for CQ magazine. He is a professor of Electrical/Computer Engineering at The College of New Jersey. He especially prizes the ARRL's Technical Merit and the CSVHF Society's John Chambers Awards among others that he has received for his contributions. He is a Fellow of IEEE and a past Distinguished Microwave Lecturer.

**Please note that this meeting will be held on-line via Webex. Please see Ken's information on how to log in.**

### SJRA is Now on Facebook

For those who have not heard, we have a SJRA group page on Facebook. It allows us to share files/pictures, demonstration videos, announcements, reminders, etc. If you are active on Facebook, please join us and invite any prospective SJRA members to do the same.

<https://www.facebook.com/groups/SJRA.K2AA/>



### SJRA Membership Drive

Attention SJRA Members: Sign up four new members by December 31, 2020 and get your 2021 Membership free.

For additional information please contact Art, N2CPR or email:

**Membership at sjra dot org**

## March General Meeting

Al, KD2ST



**KNOW YOUR COVID-19 DISTANCE**



Sign Credit: Ken, K2WB

The SJRA has been adjusting our operations to support national, state, and local public health guidance. Following CDC & WHO guidelines, the SJRA had their first ever on-line general meeting.

The meeting held on March 25th was a great success with 38 members checking in. Rick Lawn, W2JAZ presented a very informative overview of FT8 digital mode operation. For those that missed the meeting, Rick's presentation can be reviewed at: [https://drive.google.com/open?id=1OeVXT1m9hj\\_1knwDokDQvg-2IMo4ARpX](https://drive.google.com/open?id=1OeVXT1m9hj_1knwDokDQvg-2IMo4ARpX)

After Rick's presentation, John, W2FDJ reviewed the Club's budget for 2020.

One of the benefits of virtual meetings is that out of town members; Ted, N8MP and Jon, W2MC were able to join us.

Thanks to Rick, John and Ken for putting together a fantastic meeting.

## Club History

From the April 1974 Harmonics:

### JOTTINGS (Cont'd)

A preliminary look at the DX contest results indicates a score of 1.6 to 1.7 million points, which is good, considering the conditions this year.

Al Abercrombie described an inexpensive way to get on 10 meter AM. CB Transceivers that are available for a low price (\$19.95) can be easily converted for use on 10 meters.

### New Members

Applications for associate membership were received from:

Mike Paolini, WA2PFD (Now AA3MF)

Ken Botterbrodt, WN2UAD (Now K2WB)

John Yowell, WN2UDL

All were accepted.

The next meeting of the board of directors is to be held at the home of Al Abercrombie, W2GJS, on May 3, 1974,

The meeting was adjourned at 2250 EDT.

**List Your "For Sale" Ham  
Stuff in the SJRA  
Harmonics**

**Email: harmonics at sjra dot org with  
your listing.**

*(Meeting Minutes Continued from page 3)*

so that members could prepare their home computers to access the virtual meeting.

#### **Presentation and discussion of the club bylaws.**

The bylaws committee presented the updates and changes to the club bylaws that they had worked diligently on in the previous month. The bylaws were reviewed, and editorial comments incorporated. The board approved the revised bylaws for distribution and approval by the general membership. The committee was thanked for their hard work.

The meeting adjourned at 10:20.

## **VE Report**

VE sessions have been postponed due to the Covid 19 situation. The VE sessions will resume once it is safe to do so.

<b>Total New or Upgrades to Date</b>			
<b>Tech</b>	<b>General</b>	<b>Extra</b>	<b>Total</b>
168	82	41	291

**The 300<sup>th</sup> person to obtain an initial license or upgrade with the SJRA VE team wins free SJRA Membership for one year!**

## **Items for Sale**

### **Transceivers For Sale:**

- **Icom 7600** - Mint. All accessories including manual and box. **\$1,250.**
- **Kenwood TS-590SG**— Mint condition- only 2.5 months old. **\$1,000.**
- Late serial number **ICOM 706MK2.** Voice synthesizer, 1.9 narrow SSB filter. Complete with hand mike, mounting bracket, screws, uncut power cord. Full output on all bands 160-440. **\$550** Add auto tuner AT-180 for \$200 more.

For any of the above contact **Art, N2CPR. Artarnold at yahoo dot com**

### **Antennas for Sale:**

**Cushcraft A3W** with 30m driven element. For WARC bands 30/17/12m: **\$150.00**

**Hy-Gain TH6DXX**— 20/15/10m: **\$150.00**

**Hy-Gain 402BA**—2 Element 40m Beam: **\$200.00**

They will be disassembled and marked for easy reassembly and transportation.

Contact by email: **ken at k2wb dot com**

**Cushcraft Model A-3WS** 3 element WARC bands beam antenna still in the box never opened. Will accept any reasonable offer for it or willing to trade or deal. If interested please contact **Jack Froehlich, W2AF** at 856-809-2965 or 609-352-9696.

The antenna can be picked up in Atco, NJ. Thank you for your time.

## Radio Sport aka Contests

John, W2FDJ, johnd152 at Verizon dot net

### Member's Activities:

Please send your thoughts and ideas to me at **johnd152 at Verizon dot net** for publication.

The only major contest since the last Harmonics was the CQ WW SSB WPX held the weekend Mar 27-29. Thanks Joe, K2WJL for submitting your results.

Joe, K2WJL 197 QSO's 120 Mult 42,960 Points

None of the major CQ or ARRL contests are scheduled in April, in fact the next major worldwide contest will be the CQ WW CW WPX on May 29-31.

Until then there are a number of shorter contests and State QSO parties that you may enjoy. See the SJRA Facebook page for some postings by John, KD2RKA on the QSO parties.

**Upcoming Contests** - see [arll.org](http://arll.org) or [contestcalendar.com](http://contestcalendar.com) for rules and more details.

### Every Tuesday only

**Phone Frey** 10:30-11pm. (yes 30 min)  
(ten weeks -4 times a year).

### Every Wednesday only

**CWops Mini-CWT test** 9-10am, 3-4pm,  
11pm-12am (three one hr. sprints).

### Every Thursday only

**NCCC Sprint** 10:30-11pm. (yes 30 min.).

### Every Thursday only

**NCCC RTTY Sprint** 9:45-10:15pm. (30 min.).

**222 Mhz Spring Sprint:** 4/14, Tues. 7 pm to 11 pm. 222 Mhz, modes not specified.

**ARRL Rookie Roundup:** 4/19, Sun 2 pm EDT to 8pm Sun. HF; SSB.

**432 Mhz Spring Sprint:** 4/22, Wed 7 pm EDT to 11 pm. 432 Mhz. Modes not specified.

**Microwave Spring Sprint:** 5/2, Sat 8 am EDT to 2 pm. Above 902 Mhz. Modes not specified

**50 Mhz Spring Sprint:** 5/9, Sat 7pm EDT to 11 pm. 50 Mhz. Modes not specified

**CQ WW WPX Contest CW:** 5/29-31, Fri 8pm EDT to 8pm Sun. HF; CW.

### Looking Longer Range:

**ARRL June VHF Contest:** 6/13-14, Sat 2pm EDT to 11 pm Sun. VHF, All modes.

**ARRL Kids Day:** 6/20, Sat 2pm EDT to 8pm Sat. HF + 2m rptr. SSB + 17, 12 mtrs.

**ARRL Field Day:** 6/27-28, Sat 2pm EDT to 5pm Sun. HF; All.

## How the National Bureau of Standards helped make “radio”

This was originally published as “NIST’s Role in the Early Decades of Radio (1911-1933)” on the National Institute of Science and Technology’s blog, “Taking Measure”.  
<https://www.nist.gov/blogs/taking-measure/nists-role-early-decades-radio-1911-1933>

Even if you weren’t able to watch the recent Super Bowl on TV, you could still listen to the play-by-play commentary on the radio. But radio does more than just broadcasting sporting events or playing music. It plays a major role in emergency response, navigation and science.

The word “radio,” however, didn’t become part of our regular vocabulary until 1911, and it happened thanks in part to J. Howard Dellinger, a radio scientist at the National Bureau of Standards (NBS), the agency that became the National Institute of Standards and Technology (NIST). This came about when the second International Radiotelegraph Conference was being planned in London, and a professor sent

Dellinger a paper that he was going to present to the conference for review.

At the time, “wireless” was used as the term for radio communication, especially by the British. However, NIST was charged with revising standards in preparation for the conference, and Dellinger suggested that the professor use “radio,” which was already becoming a popular word in the U.S., instead of “wireless.” The professor agreed, and the word “radio” went on to become the universally accepted term.

Dellinger not only played a role in popularizing the word “radio,” but he also played a role in the first radio work done at NIST. A commercial company asked NIST to calibrate a wavemeter, a device developed by one of its engineers that measures electromagnetic waves like those of radio. Dellinger was known as the wireless expert and took on the project of calibrating the first radio instrument at NIST.

### A New Type of Radio Receiver

But for radio to become mainstream, it first had to be commercialized, which began with its introduction into households. However, the challenge was building a radio set that used the electrical current, called alter-

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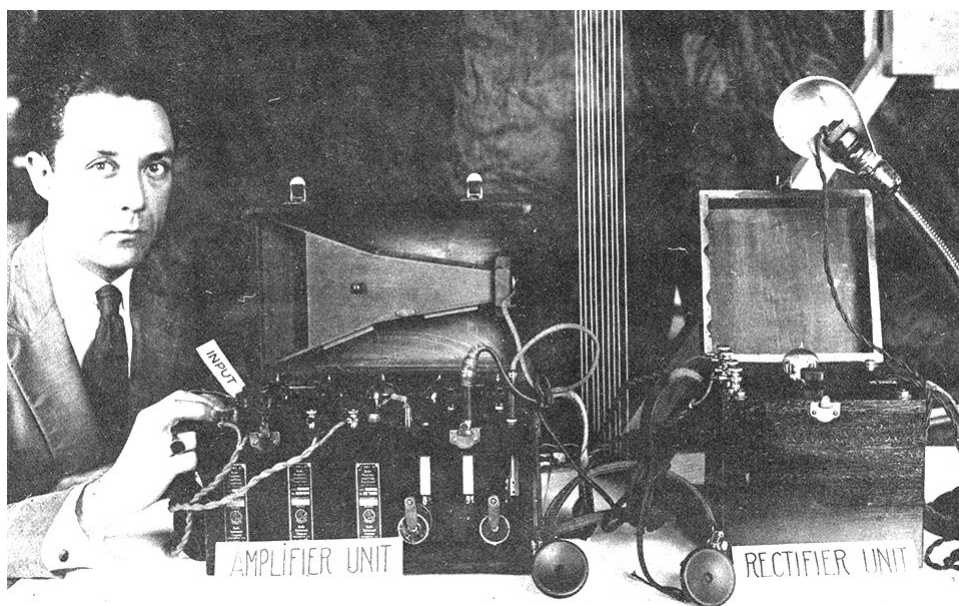
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nating current (AC), which powered lights, fans and kitchen appliances when plugged into wall sockets. The predecessor to this technology was developed and patented by two researchers, Percival D. Lowell and Francis W. Dunmore, at NBS in 1922. They called their invention the “mousetrap.”

without causing damage and with the same performance quality.

Lowell and Dunmore filed two more patents together for other innovations, and for the “mousetrap” they sold the rights to the Dubilier Condenser Corporation. Little did they know that, because there was no uni-



Percival Lowell with his patented radio set powered by alternating current.  
Credit: NIST

The “mousetrap” was a receiver for a radio amplifier that could run on AC. This was considered a breakthrough because at that time radios were only able to be powered by direct current (DC) provided by batteries. These batteries were bulky and heavy, had to be charged from time to time and were considered dangerous because of the acid used in them. The researchers’ prototype meant the radio could be used in homes

form policy on patents issued to government employees, their actions would result in more than a decade of litigation over who legally had the rights to the patent.

While they were tied up in court, the Radio Corporation of America (RCA) developed its own model of the AC radio in 1926. Its model later became the first AC-powered radio sold to consumers.

### **Flying by Radio**

During the early years of flight navigation, NIST was doing research to assist pilots while they were flying and landing. Pilots needed three things to get their bearings when flying "blind," meaning it's foggy, too dark or too cloudy to see. They needed to know the longitudinal position, altitude and speed of the aircraft, which were all achieved by various beacons installed in the plane. The remaining issue was that there were two frequencies the pilot constantly had to switch between the frequency that the Department of Commerce used to send weather information to planes and ships, which sometimes caused interference for pilots, and the frequency the radio beacon operated on, which gave altitude and other information.

Dunmore created a prototype, but Harry Diamond, a radio engineer who joined NIST in 1927, completed the device, called the radio guidance system. Diamond solved the problem by developing a separate device that allowed for voice communication to the pilot without receiving any outside interference from ships' radios.

A Curtiss Fledgling, a trainer aircraft developed for the U.S. Navy, was equipped with the device, and flight tests were performed between NIST's experimental air station at College Park, Maryland, and Newark Airport in New Jersey in foggy weather. After a series of successful tests were performed, the device was turned over to be used by the Department of Commerce in 1933.

### **Praise From a Famous Inventor**

While mostly intended for serious users, some of NIST's journals and publications were popular with the public. One such book, titled *The Principles Underlying Radio Communication*, covered topics such as elementary electricity, radio circuits and electromagnetic waves and was also published as a textbook for soldiers in the U.S. Army. The famous inventor Thomas Edison received a copy from NIST and wrote a letter thanking the first director, Samuel W. Stratton, for publishing it, saying it was "the greatest book on this subject that I have ever read."

As these and other examples show, NIST had a significant influence on radio research between 1911 and 1933. However, NIST's radio work didn't end with the first blind landing. NIST would continue to contribute to the field leading up to and during World War II, and research continues to this day in areas such as 5G, public safety communications and spectrum sharing.

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### **ABOUT THE AUTHOR**

Alex Boss is a general assignment writer in the NIST Public Affairs Office and covers standard reference materials (SRM). She has a B.S. in biology from Rhodes College and an M.A. in health.

## SJRA Jackets, Shirts, Hats

Order NOW - Next order going in soon!



Spring Jacket is \$51 (S,M,L,XL), Fall Jacket is \$58 (S,M,L,XL),  
 Shirts are \$28 (S,M,L,XL), Hats are \$20 (one size fits all)  
 Name and Call Sign embroidery included....Larger sizes slightly more!  
 Email Joe, KC2TN, with orders or additional info: kc2tn at comcast dot net

## Amateur Radio FCC License Testing

The SJRA sponsors *FREE* Amateur Radio FCC License testing on the third Wednesday of each month, except Nov & Dec. TBD. The location is: New Brooklyn United Methodist Church; 1336 E. Malaga Rd. Williamstown, NJ 08094. Registration is at 7:00 PM and testing begins at 7:30 PM. Walk-ins are accepted.

VE team members can be reached at *VE at SJRA dot org*. A calendar and more information can be found on the SJRA web site.

**April Meeting (On-Line):**  
Is the **Fifth** Wednesday, April 29, 2020

The meeting commences promptly at 7:30 PM in the convenience of your own home via Webex.

**Program For April:**

The April Program will be an EME Presentation by Dr. Allen Katz, K2UYH.

**SJRA Member May Birthdays**

May birthdays are: Holden Correia-Fisher, KD2JPV; John Fogleboch, WY2J; Carl Hyde, W2CSH; Richard Lawn, W2JAZ; Robert Petty, KC2HEN; Al Ziegler, KD2ST

Health and Welfare Co-chairpersons: Roy, WB2EOD and Dara, KC2THQ

**May Meeting:**  
Is the **Fourth** Wednesday, May 27, 2020.

**First Class Mail**

South Jersey Radio Association  
15 Pelham Road  
Marlton, NJ 08053

