

FOR YOUR INFORMATION.....

The dead line for articles for publication in "CROSSTALK" is the second Saturday of the month preceeding publication. This date is necessary for the typing of the plates, printing, and getting the paper in the mail to you. Your cooperation is requested.....

The meetings of the Gloucester County Amateur Radio Club are held the first Wednesday of each month on the third floor of the BOROUGH HALL at 8:00 P.M. in Pitman, N. J. If there is any change in either the place or time, members will be notified in advance.

Articles for "CROSSTALK" should be in my hands whose address is Wally Martin, W2PLD, 482 West Holly Ave., Pitman, N. J., Phone LU 9-6021. If a rewrite is necessary, hand in articles any way.

Be on the lookout for new members; and visitors are always welcome.

Attend meetings and support the club projects whenever possible.....

"CROSSTALK" is exchanged with publications of other radio clubs and has had several articles written by members published in their publications, FB....

Regarding comments on page 3 de Ham Monitor -- X calls are assigned to special experimental stations - i.e. in early 1950's the call KC2XAK was assigned to the first UHF television station, operated by RCA on Long Island, N. Y. Similar calls are assigned to existing experimental operations.

Why don't you take the time to read up on transistors? Each day more and more pieces of equipment are coming out with solid state. It won't be long until almost everything in the electronic line will be controlled by transistors. If one takes the time to learn the theory of solid state, one would be surprised how many applications can be applied to transistors. Basically solid state compares to tube application, yet many hams and electronic men shutter when asked to work with the pesty little critters. In years back a transition period was hard to come by when going from the crystal stage to the vacuum tube, and there were many who just wouldn't see any future in the tube, but the hams picked up the challenge and soon found many applications for the tube, which at that time were unheard of.

The low voltages and compactness offer many features in solid state, and this is a great selling point in favor of transistor application.

How many of you know that there is now an instrument for checking transistors in or out of circuits? Well SENCORE has such an instrument that sells for only \$129.50. Now this may sound like a lot of money to you, but when you consider the usefulness and time saver this instrument affords, its worth twice the price, and you being a ham who is continually building something, will find this as valuable as the volt-ohm-meter. For years we have been unable to operate without the use of this volt meter, and when anything goes wrong with it, you aren't long in getting it fixed or buying a new one. So fellows, take a word of advice, get on the band wagon now and start learning all you can about those little black things called transistors, and you will see how interesting they can be, and then too, you will have the jump on the other fellow when it comes to shooting trouble in your rigs or other equipment.

## OMNIDIRECTIONAL ARRAYS.....

For many applications, it is desirable and important to provide an antenna pattern that is uniform for all horizontal angles. The over-all antenna gain under these conditions will usually have an undesirably low value unless radiators are stacked vertically to provide directivity in the vertical plane. Many of the basic radiators such as loops, dipoles, or sleeve antennas possessing axial symmetry, can be arranged in a vertical array for this purpose. The turnstile antenna consists of two half-wave length dipoles crossed at 90° and excited in phase quadrature. Turnstiles are usually stacked with half-wave spacing and fed in phase. The superturnstile is used to increase the band-width over which it is possible to maintain a low standing wave ratio. The "dipoles" consist of vertical fins or wire structures. The fin length is usually less than three-quarter wave length, and the vertical separation is approximately one wave length.

The impedances of the driven antenna is lowered by parasitic elements. A folded dipole can be used as the driven element to increase the input resistance of the antenna. The gain of a parasitic array depends upon the number of elements in the array and their spacing. With one reflector or director spaced as to obtain maximum gain, values of approximately 5 db over a half-wave antenna will be obtained. A three elements array with one director and one reflector properly spaced will yield a maximum gain of over 7 db compared to a half-wave antenna. A four element array consisting of a reflector and two directors properly spaced will yield a maximum gain of over 9 db compared to a half-wave antenna.

Many surprises await the ham who will take the time to experiment with the different kinds of antennas. It hasn't been too many years ago that antennas couldn't be purchased and the ham had to build his own if he wanted to get out of his back yard. Today there are still many kinds and types of antennas being built by the true hams, and they are not relying upon basic book stuff. Through trying and building many new ideas can and will be established by the ham. A good example of this is the work that has been done on the various antennas used in the moon bounce. To illustrate a point, several years ago when I was climbing the ham ladder, one of the fellow hams that worked with us actually loaded and transmitted using a large tomato can for an antenna, while many others used to use a rainspout for an antenna. It was interesting to see the various gadgets and the results obtained with them. This was fun, and true hamming at it's best. We have enough newer members of our club, and this should offer some kind of a challenge to them. See if you can't come up with an antenna home-brewed that will really add points to our field day score. What better time could have been set aside for you to surprise your fellow hams. I can remember another time when I saw some of the wierdest types of antennas, and that was during a hidden transmitter hunt. But let me tell you, they really worked and produced results. Talk to some of the older hams and find out their opinions.

When I wrote this article on antennas, I did not know that Bob was coming up with his excellent article, so you can see how the theory of antennas has many applications, and this also should stimulate you more that ever to work on your antennas.

HIGH FIDELITY & AM BROADCASTING BY BOB SPAIN, WB2RVE

"HIGH FEDELITY" is probably one of the most misused words in today's electronics vocabulary. A glance at the ads in the Sunday newspapers will show SUPER HIGH FIDELITY table and portable radios. How can the average pocket radios be Hi Fi? The 2" speaker probably can't reproduce any sounds below 250 cps, and has a high frequency cutoff around 8000 cps. The "super-deluxe" detector and audio output stage probably aren't much better also. In contrast, even the cheapest Knight-Kit or Heathkit AM/FM tuners have audio response from 20-20,000 cps. The human ear's average can't hear sounds below 25 cps, or above 15,000 cps.

As a person gets older, his ears become insensitive at higher frequencies (i.e. - above 10,000 cps.). As a point of comparison, it should be noted that AM broadcast stations are required by the FCC to be able to have audio response from 30-7500 cps. (Response at all frequencies must be within 2 db of the level at 1000 cps.) FM broadcast stations must have an audio response extending from 50 cps to 15,000 cps. This is one of the reasons FM stations sound much better than AM stations.

In the U.S., AM broadcasts stations are spaced every 10kc. from 550 kcs. to 1600kcs. At first glance, it would appear that a station on 1230kc. being modulated at frequencies up to 7500 cps. would splatter onto stations operating on 1220kcs. and 1240kcs. In theory, this would happen, but in practice this is an improbability. The FCC has placed minimum mileage separation requirements on adjacent channel stations. In actual practice, the station on 1220kcs. might run 5 kilowatts and be located in Virginia, while the station on 1230kcs. might run a kilowatt and be located in Wildwood, N. J. and the station on 1240kcs. would be running a kilowatt and be in Bridgeton, N. J. Since the modulation sidebands in the 5000 - 7500 cps. region would have their signal strength reduced by pass loss by the time they arrived at a city where an adjacent channel station might be located, no noticeable interference would result.

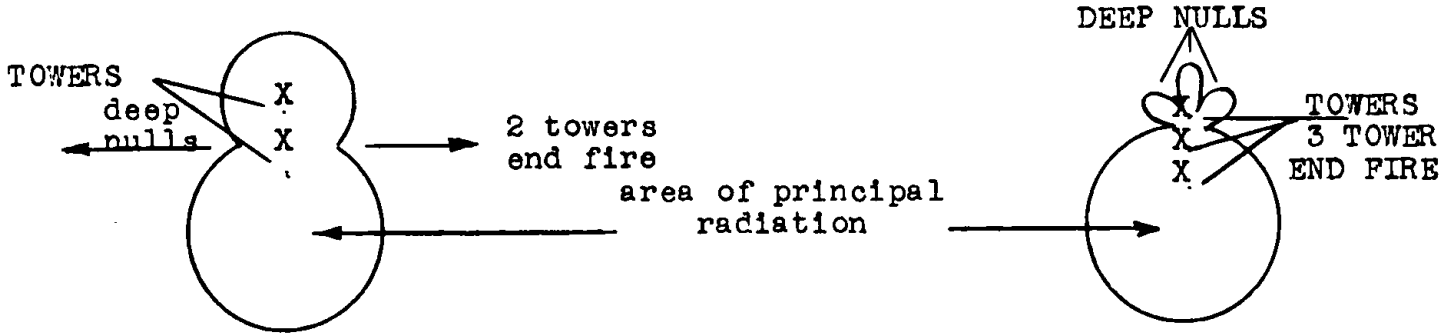
Broadcast stations are licensed to a specific city, (example - WPEN is licensed to Philadelphia) by the FCC. The FCC requires that a broadcast station give primary service to the city of license, and secondary service elsewhere. To "protect" (cause no noticeable interference) radio stations on their channels or adjacent channels, many AM stations use directional antenna systems. These directional systems consist of several vertical towers, all driven (fed with RF), and phased in such a way that the desired radition pattern is produced.

The continuing part of this article is on the next page, owing to the length and importance of this article due credit necessitated this being done. Ed. Note - Once again Bob Spain has come through with an interesting and informative article and I want to take this opportunity to thank him on behalf of the effort and time involved to make this article good reading.

\*\*\*\*\*SATURDAY, JULY 18 - ANNUAL FAMILY PICNIC - ALL DAY - LAKE GARRISON

AM cont.

Examples of DIRECTIONAL PATTERNS that can be easily produced are shown below.

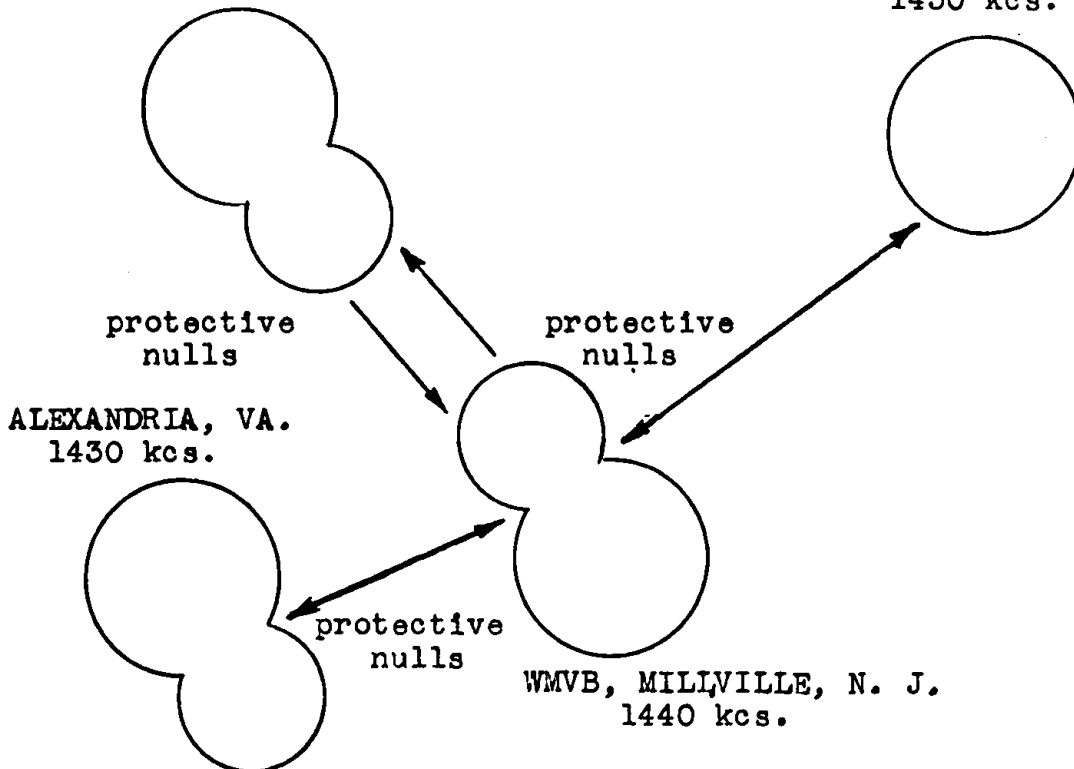


HORIZONTAL RADIATION PLOTS.....

Theoretically any number of towers could be used in a directional antenna system. The more towers that are used, the greater the number of deep nulls that can be produced. Also, the field intensity in the major lobe is increased. Listed below is an example of how broadcast stations protect each other's primary coverage.

RED LION, PA.  
1440 kcs.

WFPG ATLANTIC CITY,  
1450 kcs. N. J.



SCUTTLEBUTT

Thought I did real FB to work WS2JRA/2 during their 50th year celebration last week until I heard that WB2FJE and WA2VEE worked WS2JRA/2 on all bands!! Hope their certificates are as loud as their Sig.

Along the DX trail--WA2VEE recently worked C31CT (Andorra). Andorra is about as big as Glassboro, Bill. W2SUA wrked a 4S7 (Ceylon). Just proves what that extra height can do. I could barely hear that station at 42 ft. whereas Shorty gave him a 5 x 7 with his 84 ft. beam. Needless to say, the pile-up was horrendous, but ol Shorty pulled through another rare bird. Did you guys read the recent article in QST where heights of two identical quads were compared? I'm a firm believer that this article is true vis a vis this 4S7 incident.

Good to see WN2FCY and WA2DNL out to recent club meetings. Hope respective work and school skeds will continue not to conflict on the first Wed. of the month, fellas.

W2AFZ recently did good deed by contacting a missionary in the Congo and permitting her friend in Westville to chat with this guy via the Congo station. Afterwards, Della got to thinking about this business of third party stuff and decided to give Joe Welch a land line buzz. Joe promptly informed our first lady that Congo is not on the Third Party agreement list. (Nice one Della!!, it's OK, however, we won't tell a soul). Will we guys?? (Wonder how she worded her Question to Joe??).

Great to hear WB2MSH, Henry Feltman check-in on the 10 meter net the other nite. Henry, just out of the Navy after 4 years, was a former GCARC member and informs us he will be out to the next meeting. Real FB. Henry served in the Navy Security Group and spent much time in Guam and in Morocco.

WB2WAK did his usual splendid job as hawker at the White Elephant Sale last meeting. Boy, with Paul at the helm, one learns fast not to cough, burp, scratch one's head, or smile during the bidding--or else you may come out a winner, or a loser as the case may be. (Ain't that right Stull??)

WA2SEA did real first rate job of handling the 6 meter net the other nite. Some sticky problems arose, but Harry weathered the storm nicely.

Speaking of running a good net, a station from Williamstown and one from Darby checked into the 10 meter net recently. They did so simply because they read the mail awhile and liked what they heard, or perhaps what they didn't hear. Nevertheless, it was a fine tribute to WB2FJE and one that is rightly deserved.

Our code class has produced 7 graduates out of 9. Not a bad average. And, incidentally, 3 of the graduates are now GCARC members, 2 more were out to the last meeting and have membership applications, and the other two will be out to the May meeting for sure. For you skeptics, this is further proof that the code classes are great member-snaggers as well as contributing a service to the individual interested in getting started in Hamming. I wish to thank the following for rendering first rate assistance with the code class this year: WA2VEE, WB2JZX, W2FBF, and student graduates Howard and

Rick Carter for their assistance with setting-up.

We were sorry to learn of the passing of Ron Blakeslee's father. Hope all has settled down back to near normalcy by now, Ron.

WA2EOB informs that his brother Jerry, a former GCARC member now living in Maryland, had his tower blown down during the recent storm; it landed across some high tension wires, blew out every tube in his rig, and put out the town's electricity for miles around! This incident should make you feel a lot better Paul---look what could have happened! (HI HI).

73's

de WA2NPD

MARK THIS DATE ON YOUR CALENDAR!!! SATURDAY, JULY 18 - ANNUAL FAMILY PICNIC

ALL DAY - LAKE GARRISON

MARK THIS DATE ALSO!!!!!!! JUNE 3, 1970 is the Film Hams' Wide World. to be presented at the Pitman High School. This film is highly recognized for all people to see and enjoy. We welcome all visitors and other Hams to see this classic film with us. The Gloucester County Amateur Radio Club cordially invites all to come!

FOR SALE

HA460 Six Meter Transceiver--20 watt--12 or 110 volts power supply built-in. For information on purchase call George Stuart

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3 Element 10 meter beam (new condition)  
Preamp (all band variety)  
Q Multiplier Heath (variety) For information call John Kull

PLEASE DON'T FORGET OUR JUNE MEETING AS I KNOW YOU WILL MISS A VERY GOOD ONE IF YOU DON'T COME TO THIS ONE. 73 Program Chairman.