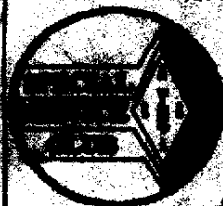


Alliance Amateur Radio Club

Affiliated with the "American Radio Relay League"



ZERO BEAT



August 1990

YMCA Targets 50 New Novices !

Bill N8MKL reports that the goal of YMCA novice program during the next school year is fifty new novices and six upgrades to technician class. To perform this noteworthy feat Bill could use all our help as well as the following:

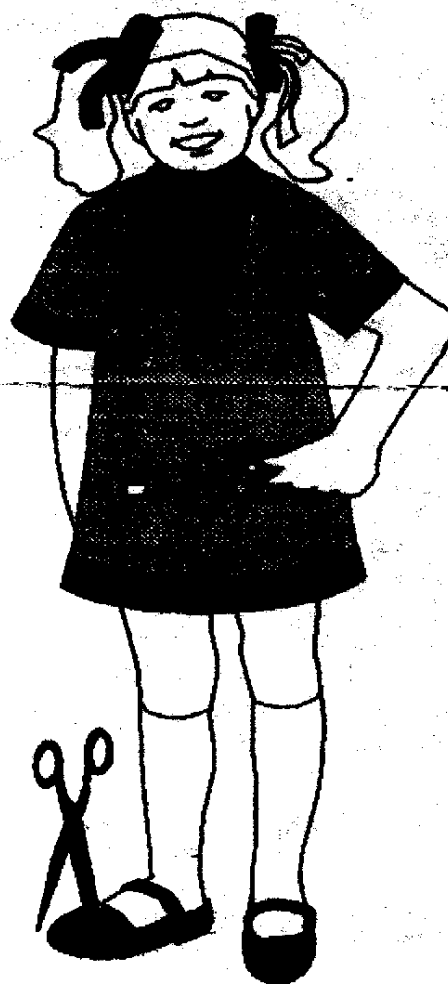
KEYS - Any type of key (old car keys are not needed). The kids compete to take home the only two keys the YMCA has. Currently they have a Vibroplex and a Bencher, but any type will do.

Radios - Any type or condition. Old, new, broken or working. For valuable rigs the YMCA can provide you a letter of donation for the IRS and issue an estimated value.

Books - Any kind. (Ham Radio related that is) Novice, Tech, General and Extra study guides. Old call books and old handbooks.

Maps - Any maps. The kids love maps. The one the YMCA has were donated by a club member. They are excellent, but they need more.

Guest Appearances - By any ham during the busy school year always helps build enthusiasm. Be prepared to spend an hour or so with a child on a project. It could be CW or theory, or whatever else is happening that day.



No Other Words Needed

The next meeting of the Alliance Amateur Radio Club will be held on Thursday 2 August 1990. Meetings are held monthly at the Alliance Community Hospital at 7:30 PM in the cafeteria on the first floor. Visitors are always welcome.

Zero Beat is published monthly by the Alliance Amateur Radio Club. All correspondence related to the Zero Beat should be addressed to:

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Articles for publication can be submitted to the editor by mail, in person, or electronic transfer. Electronic transfer can be made by telephone modem, radio teletype or an IBM PC formatted disk. Disks should be 5 1/4" 360Kb or 3 1/2" 720Kb. Disks will be returned. Files should be in ASCII format or if in an IBM PC wordprocessor format, the wordprocessor used must be specified to permit conversion. For radio or teletype transfer contact the editor to make arrangements.

The activities of the Alliance Amateur radio Club are coordinated by an elected board of officers. The current officers and their respective positions are:

President - Jim Wilson - K8GQZ
Vice President - John Myers - W00G
Secretary - Gladys Wilson - K8G0A
Treasurer - Patti Hiller - K8R8J
Trustee - Jim Ferguson - N8DZA
Trustee - Dave Buchwalter - KC3CL
Trustee - Larry Ashburn - KE8VE

CALLS The latest calls as of July 1, 1990, are as follows:

- EXTRA - AASBQ (+2)
- ADVANCED - EF8HW (+19)
- TECH/GENERAL - N8M0Z (+96)
- NOVICE - K8K8R (+115)

According to FCC reports, 1343 new Novice licenses have been issued in the eighth call area since January 1st. Don't forget, the AARC Novice classes are due to start in September, but if you know someone who needs help in the way of classing, tapes, etc., contact John or Pam, and we will be glad to help, or match them up with someone who can. Our number is 821-5513. 73's, WX8G

AUGUST EVENT CALENDAR

JULY

29 Aastabula Hamfest and Computer Show - Kent State Univ. Check-in on 148.715

AUGUST

- 2 AARC Club meeting at the Alliance Community Hospital
- 5 Portage Hamfest - Portage County Fair Grounds, Randolph Check-in on 148.80
- 9 Eastern Stark County News and Information Net - 9 PM on 148.37
- 16 Eastern Stark County News and Information Net - 9 PM on 148.37
- 19 Warren Hamfest - Kent State University, Warren Check-in on 148.97
- 23 Eastern Stark County News and Information Net - 9 PM on 148.37
- 24 AARC Club Picnic - Silver Park in the Rustic Shelter
- 30 Eastern Stark County News and Information Net - 9 PM on 148.37

CQ CQ CQ

Another month has slipped by and I'm wondering where did it go? The club meeting for July was a short one, with all of the outside activities and vacations. But we had a good time. Fifteen members were present. WX8G, John stated that he will be needing a little help in putting up the ARES antennas for the city when they arrive. N8EWV, Larry won the 50/50 drawing.

Discussion on the club picnic was tabled until the August meeting. However, Pam N8IAK volunteered to head up the picnic planning. Plan to come to the next meeting and give her your support. Speaking of Pam, How do you like the fine job she is doing on the net? If you have any ideas let her know.

Dave KC3CL mentioned in the last newsletter if the tech articles would be a good idea. I like those kind of things. Please keep the info coming.

On July 10th John, WX8G and I gave the Novice test to Larry ??? and he passed. He is now waiting for the paper work to go through and his license.

Well its time to go sharpen the ole pencil, so I'll close for now, but I'll leave you with this thought...*Memory is what makes you wonder what you forgot to do.

73's Jim KB8GHZ

Oops !

The following was printed in error in the lats Zero Beat.

Steve was listed as KB8GKE, It should have been KB8KGE.

Mike was listed as KB8GKF, It should have been KB8KGF.

Bill was listed as N8GKF, It should have been N8MKL.

From KB8GIA'S KITCHEN

Well I hope that all of you are having a great summer. I was very surprised to have one of our club members bring me a recipe. This is great, it lets me know that you are reading the newsletter and also that you have ideas and great recipes. I know you will enjoy this recipe. It sure is delicious.

Strawberry Custard Pie

2 Eggs

1 Cup of Sugar

2 Tablespoons of Flour

2 Cups of Strawberries

Beat eggs, sugar and flour all together. Out 2 cups of cut-up strawberries in your already prepared pie crust.

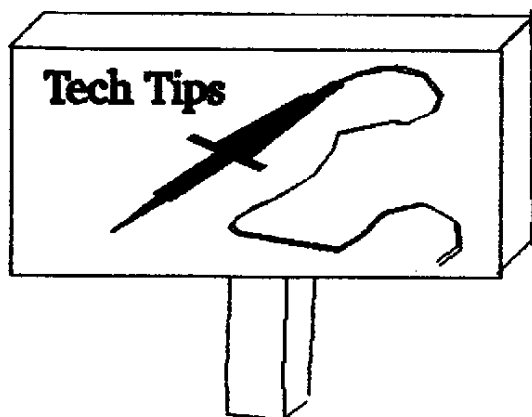
Pour the egg, sugar and flour mixture over the top of the strawberries.

Bake at 350* for 45 minutes or until brown. Now, enjoy every bite, and tell N8MAA-Jim Miller, that his recipe is a winner. Again, thank you, Jim.

I hope this will give some of you the incentive to send a recipe of yours to me, for the newsletter.

In closing, as always, I have a helpful hint: Measuring sticky liquids: Before measuring honey or other syrups, oil the cup with cooking oil and rinse with hot water.

Until next month, 73s Gladys



This is part two of four parts of the transcript of a Teleconference by Joe Reiser, WIJR. Joe spoke on the subject "Antennas and Antenna Systems, Where is the State of the Art Going?" The transcript is in four parts. Part one was included in the July Zero Beat. Parts three and four will appear in future issues.

Part 2 - Lower HF Frequencies

In the past few years we have enjoyed some of the greatest radio propagation ever. Now the sun spots are declining and the fervent DX'ers and those looking for a challenge are heading for the lower frequencies. All kinds of new or improved systems are evolving and I will now attempt to cover this frequency range and development.

Simple Antennas:

1. 1/2 wave dipole is hard to beat. It has good directivity, very efficient and the ground reflection in the far field is the only real loss (and that we have no control over!). The biggest problem is broadbanding especially on 80 meters. The open sleeve dipole invented by H. E. King and J. L. Wong (IEEE PGAP, pg 201-204, March 1972) is now being explored for HF. If it can be successfully scaled down from 225-400 MHz, it could improve bandwidth by a 2 to 5 factor.

2. Inverted Vee - radiates equally poor in all directions. Not really my favorite antenna!

3. Verticals: There are many articles on this antenna type by Jerry Sevick, W2FMI, Paul Lee, ex W3JM and now K6TS (?) etc. There are several popular lengths - 1/4, 3/8, 1/2 and 5/8 wavelength. See Ham Radio September 1981 for an interesting article on the 1/2 wavelength vertical by VE2CV. The main

problem is ground losses. The ground plane is an exception since it has 3 or 4 resonant radials and hence is very efficient. Typical resistance for the conventional vertical 1/4 monopole is 30 to 36 ohms. Top loading, especially with a top hat is recommended to improve efficiency especially on shortened verticals. Also bandwidth can be very narrow especially on shortened verticals since they are highly reactive. I am somewhat against verticals for QTH's where ground conductivity is poor or where there are lots of local obstructions. A good vertical has most of its radiation near the current point which is usually the base! Absorption by trees, local objects, houses, etc. is very detrimental. Also we have very little control over the far field unless we live on or near a salt marsh or alkaline flat in the prairie.

4. Loops, Quad, Delta, side-fed Delta loop and Bi-Square. Great antennas if you have the space. The most popular seems to be the delta loop apex up fed on the lower corner up part way up the side.

5. Slopers: This is typically a 1/4 or 1/2 wavelength antenna that hangs off a tower and in a semi-vertical fashion and therefore may have some directivity (due to the tower acting as reflector) and a low angle of radiation. I prefer the G5RV antenna (June 1977 Ham Radio Horizons) since it is shorter than a 1/2 wavelength dipole. It consists of 51 feet of wire each side of the center insulator fed with 30 feet of 300 ohm feed line which then connects directly to a 50 ohm coax line. It does have poor VSWR over most of the band but never infinity. Advantages are multiple band operation (eg. 80/40/20/10) and it acts like a collinear (with gain) on harmonic bands. At my station I use three G5RV antennas as slopers spaced equally around a 97 foot tower and hence get good coverage over most of the world on multiple HF bands with fair directivity.

6. Beverage or traveling wave antenna is especially good for receiving despite its low efficiency. This is true because the outside or ambient noise is very high and hence compensates for the loss. Use a trifilar wound transformer and a low noise high dynamic range preamp to make up for the losses. Keep

the height up at say 10 feet so no one walks into antenna and files a law suit against you. This happened locally when a horseback rider was knocked off a horse by a local's beverage antenna! The length should be greater than a wavelength at the operating frequency but 2 wavelengths is probably the maximum recommended length. To keep noise down, use a wire with at least 30% copper and is PVC coated. I have used beverages for transmitting and John Belrose, VE2CV, has recently written an article on same in a recent QST.

Guys and Guy Wires: They must be tested for resonances especially if they are not broken up with insulators. The difficulty is testing. One test is to monitor VSWR carefully and remove or change a guy. Any changes indicate problems. Likewise, the front to back ratio carefully monitored on a local controlled station can give a feel for the problem. In some rare cases such as sloper arrays, etc., they can actually be part of the array such as working like reflectors, etc.

ARRAYS:

1. Yagi: Very large at HF, especially if full size! Bandwidth can be a big problem. One 75 meter fan (W2HCW) had problems hearing the Russian SSB stations operating on 3640 KHz, despite the fact that he was very strong over there when transmitting in the US phone band at 3800 KHz. When he turned his beam 180 degrees he could hear them but now they couldn't hear him. It turns out that the front to back ratio flipped over below 3700 KHz!

Many stations on 75/80 meters are using wire Yagi beams quite successfully even at low heights (30 to 50 feet). They do work but there is much tuning needed to determine correct lengths, etc. The problem of narrow bandwidth mentioned above must be considered. Loaded Yagi antennas have even narrower bandwidth.

2. W8JK: This antenna has been around a long time and is very successful at HF but it is bi-directional.

3. The ZL Special and KB9CV modern version of same is seldom considered but I think a worthwhile antenna. It is essentially a 2 element log periodic invented over 10 years before the log periodic! It has excellent gain (like the W8JK), directivity and is uni-direc-

tional. The feed system forces the pattern so it does not have the limited bandwidth and pattern reversal problems as severely as the Yagi does. See Ham Radio, May 1976, "Understanding the ZL Special."

4. LPA (log periodic array): It is essentially a wide-band uni-directional antenna. It has a sort of cardioid pattern at its lower frequency end so a reflector is worthwhile. Make the low frequency cutoff a few % below the lowest frequency of interest to enhance the lower frequencies. The best references are George Smith's articles in 73, Ham Radio and QST. Other good HF articles of interest on the subject are: - "Log Periodic Antenna Design," Ham Radio, Dec. '79 by P. Scholz W6PYK and G. Smith W4AEO. - "Vertical Monopole Log-Periodic Antennas for 40 & 80 Meters," Ham Radio, Sept. '73 by G. Smith. - "Feed System for Log Periodic Antennas," Ham Radio, Oct. '74, G. Smith W4AEO.

5. The bobtail array: This simple array has recently enjoyed a comeback. It consists of three 1/4 wavelength verticals spaced 1/2 wavelength joined at their tops by a single wire. Usually a high impedance antenna tuner is used at the base of the middle vertical to match the high impedance to coax. This antenna has 3 to 5 dB gain and is bi-directional. Recently articles have appeared in 73 magazine on how to feed the array directly with coax at the top of the array.

6. Vertical Arrays: In the last decade or so, many amateur radio state of the art advances have been made in vertical arrays by the late Jim Lawson, W2PV (QST, March and May 1971), Dana Atchley, W1CF et al (QST April 1976), "Updating Phased-Array Technology," W1CF (QST August 1978) and Richard Fenwick, K5RR and R. Schell, PhD (QST April 1977). They have used computer aided techniques to design optimum 2, 3 and 4 element arrays using triangles, squares and lines of verticals. Their work has considerably improved not only the gain but also the front to back and patterns of arrays.

More recently, Roy Lewellen, W7EL (QST, Aug. 1979 pgs. 42/43) and Forrest Gehrke (Ham Radio, May, June, July 1983 and other articles to follow which will tell all!)

have shown how to improve the feed systems of such arrays to guarantee that the mutual coupling between elements will not deteriorate the gain and patterns in the real world. This work and computer aided work in the future will have a big effect on operations in the lower HF region.

7. Other Arrays: Don't forget "V" beams and Rhombics. They can yield high gain. The principle problem is patterns which are not always very good (side lobes, etc.). These types of antennas are particularly good if you have lots of real estate and only are interested in one or two directions. I think the sloping terminated "V" beam is particularly worthwhile.

8. The active antenna array: Last but not least let us explore the active array. This usually consists of a small (0.5 to 1.5 meters) vertical monopole feeding the high input impedance of a low noise high dynamic range FET preamp. Arrays of these are in commercial service and can provide extremely high directivity. I am presently working on one for myself for solving some HF receiving problems. The chief advantages of such a scheme are that it is small and doesn't need an elaborate grounding system. Phasing is easy since the outputs are not reactive and mutual impedance affects are low compared to a conventional full-sized array. Also don't overlook ferrite loaded antennas and loops. A good reference for HF DXing and antennas is ON4UN's book on 80 meter DXing.

Summary:

There is lots to be done. Computer aided design will help. We must explore optimum topology for vertical arrays (2, 3 and 4 elements etc.) to find best layout. Maybe we should look at the Mill's Cross! The sloper system used today can probably be improved. The software just emerging in the last few years will greatly help in the design of high performance arrays. Don't overlook the log periodic or the ZL Special. The biggest problem to solve may be the wideband feed system. Only now is the open sleeve dipole by Howard King and J. Wong (IEEE PGAP March 1972) being explored. If it can be successfully scaled from the 225 to 400 MHz spectrum, it could potentially yield a 2 to 5

times bandwidth increase over the present half wave HF dipole!

Something to Think About

Recently I received a letter in the mail that I think all hams should be aware of. At the request of the writer, I cannot reveal his name.

Way back when I first became interested in ham radio, the chaps I got to know in my area were most helpful and put a lot of "elmering" or teaching me to get my Novice license. I learned, then, that the majority of the hams believed in hams being helpful, and generous to newcomers. That was some 30+ years ago. Apparently, the ham creed seems to have changed quite a bit. As an "oldtimer", more or less, I have helped quite a few younger lads, some of whom went on to become Electrical Engineers, or Electronic Specialists in the commercial world. In the past few years apparently the younger hams still help the new hams (teenagers and fairly young people), but, when it comes to the OLDER generation there is a distinct "generation gap", or so it seems. Could it be that an old goat is too bull-headed, and/or fixed in his ways to get some assistance? As an example, I am in my late sixties, and mobility impaired, which means I am not able to get to many club meetings, do antenna work, or even walk around a lot at hamfests. My XYL and I are both licensed hams, and have been for many years. She is wheelchair bound, and I recently was liberated from a wheelchair. As a member of two local ham clubs in the last two years or so, I have asked for help to get my antennae adjusted, moved or otherwise get some little odd job (like re-connecting some ground radials) and somehow or other, it appears that I have become afflicted with Bubonic Plague, Leprosy, or some such condition. The club members probably got tired of hearing me ask for help, so I simply quit asking. As a result, my literary efforts, on behalf of the two local radio clubs, has diminished drastically. In spite of the fact that I have abundant news sources and am capable of generating several pages of ham news each month.

What does it take to get some aid? I no longer ask for help from the local clubs, although I have been quite active on the HF bands, and also on two meters. Maybe this letter will bring some ideas to the hams and maybe not. I am not asking for sympathy, or asking for attention. What I would like to do is to be able to remain on the air instead of having my antennae in disarray, or in danger of landing on someone's head. Many thanks for letting me air my gripes. I do not like to write letters like this and very rarely do so.

This gentleman said he was not interested in bad-mouthing any particular club, or embarrass the members. He does think however, that there is becoming more and more of a generation gap in the ham ranks.

Submitted by Pam NSIAK

Don't Just Do Something! Sit There

Kay Craigie, KC3LM

You tune onto a frequency and hear a situation in progress. You don't know what is going on. What should you do?

First, turn your VOX off, Then:

1. **KEEP QUIET:** Don't ask what is going on. Don't ask if it's real or a drill. Don't offer help. Don't answer questions. Don't relay. Don't tell other people to shut up. Don't ask weak stations to say again. Don't ask where this repeater is located. Don't ask if your friend Alonzo who used to live up this way has checked in because he had a real good signal on this band back in 1956. **KEEP QUIET.**

2. Tips 2 through 9 are the same as Tip 1.

10. If, after carefully listening long enough to understand what is going on, you discover that you can definitely be of specific assistance, check in at a time when it is not disruptive of the ongoing activity on frequency. If Net Control asks for stations in Guatemala or the Yukon, it is disruptive to check in from Bushwhack County, Pa. After acknowledgment by Net Control, return to following Tip #1 until asked to transmit again.

Of course we can't hear the 500 operators who are following Tip #1, only the dozen who don't - so we can't gauge the true percentages. However, it doesn't take many unhelpful helpers to cause serious, maybe even dangerous, delay. Please consider including these tips in your next licensing course or training net.

From The Delaware-Lehigh ARC Inc., Nazareth, PA (From World Radio, May 1990)

FIELD DAY

IT WAS A PICTURE PERFECT FIELD DAY, WITH WARM BREEZES AND TEMPERATURES IN THE 80's

HA! Made you look, didn't I? The weather made you appreciate the long underwear you had tucked away in your dresser. The site, however, was excellent. Murphy and his family were quickly exorcised from our field day (maybe they went to Salem) site.

We made 900 QSOs (66% on Phone - 33% on CW - 1% other) and had our highest score ever. We also learned a lot about emergency communications under adverse conditions.

NEW CALLS

We have two new Novices in the area. First is Rachel Knight, KB8KKR. Rachel is a graduate of the YMCA class taught by N8DZA and N8MKL. The second is Al Orwick. Al purchased a "Tune In The World" kit at our 1990 mall show and passed his test a few weeks ago.

Adopt A Novice !

This may sound crazy but how about an "Adopt A Novice" program. What ever happened to the "elmering" of days gone by? If one of our new novices lives nearby, perhaps we could pair them up with other hams.

My reasoning: We (The YMCA) only has two low band rigs. But we are heading for many youth licenses. There will eventually be a shortage of air time and we want these kids active on CW and 10 meter phone. Pairing them with other hams would be a way of getting them some air time, increase their potential to upgrade and introduce them to some really great hams with young children.

Club Picnic Time!

Pam N8IAK

The AARC club picnic will be in the Rustic Shelter at Silver Park on Friday, August 24, 1990. The festivities will start at 6:00 PM. I have been chosen (actually in a weak moment I volunteered) to head the food committee, this is to insure that we don't have 12 dishes of baked beans and 1 dish of potato salad. I need to know what you would like to bring. Please let me know at 821-5513(e) or 821-6545(D). Remember everyone is welcome. So bring the family and come out to Silver Park for a good time. I will be placing phone calls later to find out who is bringing what. A list of goodies will also be at the club meeting so you can sign up there.

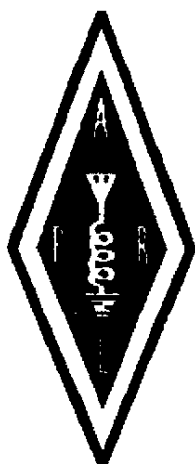
Eastern Stark County News and Information Net. Net Schedule

August 1990

- 2 No Net Club Meeting Night
- 9 KB8GHZ Jim Wilson
- 16 WX8G John Myers
- 23 KB8GAB Gary Grimes
- 30 KC3CL Dave Buckwalter

Remember, if you cannot be net control on the night you are scheduled please let Pam N8IAK know. She can be reached at 821-5513(e) or 821-6545(d)

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To:

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