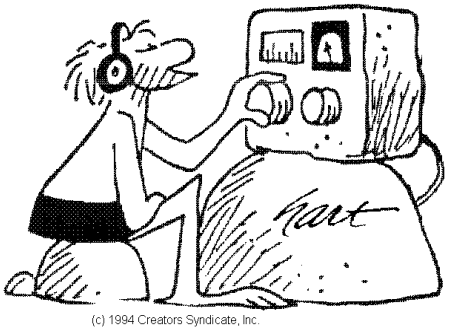

BARA Facts

Newsletter of the Binghamton Amateur Radio Association

January 2006

Website: http://www.wtsn.binghamton.edu/bara

President's Corner

2006, 2006, 2006. Sorry, I have to repeat that to myself for the first 10 or 20 days of the New Year. I greeted 2006 on the air with a bunch of other hams on 40 Meters (the stroke of 0000Z every January 1 is the start of Straight Key Night) I worked a few stations and before I knew it, it was almost midnight so I ran upstairs to watch the crazy people in Times Square. All told I worked 12 stations, good old fashioned "rag chew" type contacts.

2006 is going to challenge BARA. We need to raise some serious funds if we are ever going to own an operating site. Yes, we are continuing to work on reestablishing the lease on Milks Road, but the end game has to be owning our property. In addition, those of you who attend our January meeting will see a 2006 budget that is going to need some serious financial help.

Planning for the 2006 BARA Hamfest is underway. This represents the single largest fundraising event for the club. We are in need of a co-Chairperson or two. Bob Mess, WS2U, has "retired", after covering this job for the past few years (something about building a house this year) and we need one or two people to get into the details of the Hamfest and to run with it. Interested? Give me a call 748-5232.

The January meeting will feature a first ever Winter SKYWARN session. Should be very interesting. Try to attend the meeting and feel free to invite a friend!

I hope your 2006 has started out in high gear. How many of you made a resolution to upgrade your license? To get on the air more? Use BARA as a resource to satisfy those resolutions. Come to a meeting and ask questions or to get some help.

See you all January 18th! — 73, Bill, N2BC

The 2005 BARA Christmas Party

Thirty-two folks attended the Christmas Party/December 2005 club meeting at Russell's Steak House. Good people, good food, good fun!

Paul Slocum, N2NCB, our perennial Treasurer was presented with the 2005 *BARA Award* and a gift certificate for $150. The gift certificate was actually presented to Paul *and* his wife Anita, N2VXB, to make up for eight years of missing dinners together twice per month. Paul has very rarely missed a Board Meeting or a General Meeting, and since it's closer to "hang around" rather than drive home to Owego from Kirkwood, he typically dines alone on meeting nights at some the better known but not-so-good fast food restaurants in our area. We all hope Paul and Anita will enjoy a pleasant evening out TOGETHER! Thanks Paul for all your service to the club!

Hedy Clothier, AA2MU, once again came through with door prizes for everybody at the Christmas party. Thanks to Hedy for all the work that goes into the party.

It's not too early to mark off your 2006 calendar. Remember, December 20, 2006 for the BARA Christmas Party!

Thank You DE N2NCB & N2VXB

Anita and I would like to express a sincere Thank You to all of the BARA membership for honoring us at the Holiday Dinner. I was totally surprised when our President, Bill, called me to stand beside him and presented me with the 2005 BARA Award. To be recognized in this way, by my peers, is very gratifying to me. Now, if that was not enough, I was also presented an "envelope" with my name and

Anita's and was told that the money was to be used for a fancy dinner for all of the 300+ missed Wednesday night dinners. Anita had another meeting to attend that night, but when I got home and told her what the envelope contained, she was overwhelmed and very pleased about being included. We are planning on going to Russell's Steak and Seafood House. We are going there because when it was known as the Red Lion, it was where we had dinner on our first date on May 20, 1969. We would also like to say a Thank You to Ed, KB2SCF, for once again doing an excellent job in making the plaque. Again, thank you all for including both of us in the 2005 BARA Award — *73, Paul N2NCB & Anita N2VXB*

When Great-Grandpa Was a Pup

How They Did It in 1926

Pre-Publication orders of the ARRL *Handbook* for 2006 shipped with a reproduction of the original *1926 Handbook.* What a treat! About 148 pages of nostalgia bound in dark green paper covers.

First of all, 1926 was not a time for "Appliance Operators". Roughly half of the book is given over to a combination of general operating hints and a sales-pitch for the League. Plenty of space is devoted to the basics of radio and electrical principles. Wired Houses were still new in '26 and the problem of AC to DC conversion is covered in many more flavors than we generally see today with space devoted to Electrolytic Rectifiers, Thermonic Rectifiers, and Mechanical Rectifiers. Battery power and DC systems are also covered.

With sources of material supply few and far between, "Home Brew" construction is detailed for resistances, coils, and transformers and many parts in between. Test equipment is primitive and one memorable series of circuits for testing Power Supply Filters is emblazoned with skull-and-crossbones symbols and repeated warnings to stay clear of the grounded headsets connected to the high-voltage output. The careless and timid would not last long in this world!

Construction took several forms and both Bread board and Panel layouts are discussed. There might have been "compact" stations in 1926, but they still took up plenty of room and transmitters with open coils and adjustable clips on the tuning helices would quickly punish carelesness!

Although Crystal Controlled Oscillators are covered, Self-Excited Transmitters were quite common and much space is devoted to describing the construction and calibration of a Wavemeter for verifying your operating frequency after every frequency excursion. When calling CQ, long (repeated) calls were the norm followed by an extensive scan of the band to discover a response that might be well-off your Transmit Frequency. Surprisingly, no Crystal Sets are described. The simplest receiver (for Longwave "Commercials" using Spark) uses a single Detector Tube. The other designs are Regenerative and Autodyne Receivers designed for CW Reception for Amateur Spark was out in '26 and CW the wave of the future. Among the surprises (at least for me) was a neat discussion on the effect of Tickler Size on Coupling in the Regenerative Receiver. Now I finally know why my own "Blooper" was such a piece of garbage!

So how does it end? First with a note of triumph that 1926 found radio a well-matured technology with Spark giving way to CW and 'Phone becoming much more than a curiosity and a toy (although *serious* operators would opt for CW and distance). A grace-note of awe reminds us that the men and women of 1926 flirted with danger every time they fired up the 'Set and pushed technology to the limits. Their pioneer hands laid the foundation for the Wireless World we take for granted today.

Review

Those Great Old Handbook Receivers

If you missed out on the *1926 Handbook* reprint, don't lose heart. Lindsay Publications has extracted the Theory and Receiver sections from the *ARRL Radio Amateur's Handbook* for 1929 and 1934 and reprinted them in *Those Great Old Handbook Receivers, Techniques of Early Vacuum Tube Receiver Construction.* Tables of Tube Characteristics are provided and Construction Details are carefully laid out and designed to work. Finding the specified parts may be a bit of a problem, but those of us who poke around "A" and "B" supplies are used to things that don't turn out exactly as expected. Technically, the designs are "state of the art" for the period and include Regeneration Sets, Autodynes, and Superhets. Ultra-High Frequency Designs are discussed (but be aware that UHF was around 5 ½ Meters in those long-past days of Modulated Oscillators.

It's of interest to note that Lindsay offered this book several years ago after which it disappeared

from their catalogue. It's back again, but it doesn't seem to be identified as a reprint and it bears a 1996 Issue Date so this might be a run of newly discovered old-stock.

Those Great Old Handbook Receivers (ISBN 1-55918-171-0) is available direct from the publisher or well as through the usual outlets.

Without naming names, several lapses caught my eye in a recent Ham Rag and because they are similar to "scientific claims" that appear in the advertising sections a few words might be in order.

First, the Decibel (dB). In a few helpful words one author tried to clear things up for a questioner by noting that a certain quantity was a "pure number" with no units (like Decibels) attached. He was right about the first part, but he forgot that a Decibel is, in fact, a quantity without units — a Pure Number. It is defined to be ten times the logarithm of the ratio of two Power Levels (10 log(P1/P2)). The Power Levels P1 and P2 must have the same Units and the Ratio has the effect of stripping off the Units.

Why the logarithm and why multiply by ten? Because taking logarithms permits us to compare values that increase exponentially using simple math. Multiplying by ten makes the "Bel" (named after Alexander Graham and the official name for log(P1/P2)) ten (deci) times bigger (and greater than one). In practical terms we can then say: *When two power levels, referenced to the same base (P2 value) are converted to decibels, an increase of three decibels means a doubling of power.* Conversely, *a decrease of three decibels means a halving of power.*

The key point here is that the value for P2 must be the same and this is where a great deal of Antenna Smoke and Mirrors is found!

Decibels are tailor made for comparing Antennas and they will always give accurate results. But an antenna with 6 dB gain radiates twice as much power (in some direction) as an antenna with 3 dB of gain (in some direction) if and only if the 3 dB and 6 dB both refer to the same base.

This is where the stinkers try and catch the unwary! All real antennas are anisotropic — they radiate better in some directions than others. Even a Dipole (perhaps the simplest practical antenna) has a directional pattern and exhibits gain in certain directions. If we are comparing antennas to a Dipole it is customary to express the gain as dBd (Decibels referenced to a Dipole) and it should be noted that a Dipole referenced to itself has 0 dBd gain.

This is fine, but there is plenty of "wiggle room" for fudging things and it goes without saying that: (a) The antennas should be oriented so that the measurements are taken at appropriate reference points (no fudging by comparing gain maximum to gain minimum). (b) The Antenna Heights (and lengths) must be appropriate (a Dipole at several wavelengths height will have gain if referenced to another Dipole six inches off the ground). (c) Interactions with other antennas and with the surroundings must be minimized.

Antenna Evaluation is not a simple job. Honest measurements are complex and expensive!

Another "Wiggle Device" is the Reference Isotropic Radiator (dBi). This sounds like a sophisticated device that provides a real benchmark. It's actually a fictional antenna that only exists in dreamland. An Isotropic Antenna would radiate equally well in all directions, but it is physically impossible to make such a creature. The closest we can come is to create a mathematical model and say: If an Isotropic Antenna could be created a Dipole would have 2.15 dB of gain over that Isotropic Radiator. The magic of Decibels permit us to compare a Real Antenna to a Real Dipole (giving dBd), add 2.15 and say that our Real Antenna now has a whopping dBi gain! We have almost doubled the Antenna Gain without any cost!

Wow! If you see a dBi gain, subtract 2.15 and see how the magic skywire compares to something that actually exists!

For a really nice summary of the Decibel check out the following from the University of New South Wales <<http://www.phys.unsw.edu.au /~jw/dB.html>>. Although the discussion is geared towards sound, exactly the same principles and rules apply to electronics. Sound is also something tangible that we can experience with our senses unlike RF Watts that are best kept away from our bodies, so the examples can be pretty well grasped and related to RF.

Setting the Record Straight

Antenna Season will soon be upon us and "helpful articles" are already appearing in the Amateur Press. Perhaps it is Creeping Curmudgeoness, but I find myself less and less patient with "technical lapses" in articles that are meant to instruct.

In the same vein another author made reference to gain antennas and included the Extended Double Zepp in that list. Now the Extended Double Zepp is a fine antenna, but unless the *Book of Rules* has been rewritten it's nothing more than a Dipole (not necessarily resonant) with a Balanced Feed. Some use specific lengths of wire and Tuned Feeders to transform the Feedpoint Impedance to a particular value and an Antenna Matching Unit may be included in the installation, but in the general case the Length and Height Above Ground are arbitrary so the Extended Double Zepp might be better (or worse) than a Dipole (although there will probably be a few dBi of gain to brag about).

Forewarned is forearmed as Dear Old Dad used to say. If you let yourself get sloppy with definitions and forget precision anything becomes possible and many "miracle antennas" are measured and characterized in the Advertising Department.

Club Officers and Committees			
President	Bill Coleman	N2BC	748-5232
Vice President	Bob Handel	K2FU	693-4310
Secretary	open	----	----
Treasurer	Paul Slocum	N2NCB	687-2057
Directors	Steve Orzelek	N2MSB	775-0281
	Mel Snitchler	WE2K	723-9612
	Jack Connors	WB2GHH	724-8822
	Jim Lawson	KC2JED	797-1583
W2OW Trustee	Mel Snitchler	WE2K	723-9612
Newsletter	Ed Plesnar	KB2SCF	754-3810

BARA, The Binghamton Amateur Radio Association is an ARRL Affiliated Club

e-Mail Address: w2ow@arrl.net

Next General Meeting

7:30 PM, Wednesday, January 18th

Town of Binghamton Town Hall, 279 Park Avenue, South of the Ross Park Entrance

Board Meeting

7:00 PM, Wednesday February 1st

Broome Community College Campus, Office of Emergency Services (West Side of Campus)

Exam Session

7:00 PM Monday, January 30th

Vestal Public Library, Route 434 Vestal

BARA Dues

$18/year Single Member; $27/year Family

DX Cluster

W2OW on 145.070 MHz with a Data Rate of 1,200 baud; questions to n2bc@stny.rr.com

Local Repeater Nets

146.73 MHz STAR Net (NTS Feeder) Every

Evening at 6:30 PM Local Time

146.82 MHz BRAT Net (Informal BARA) Sunday Evening at 8:00 PM Local Time

Binghamton Amateur Radio Association, Inc.
P.O. Box 853
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First Class