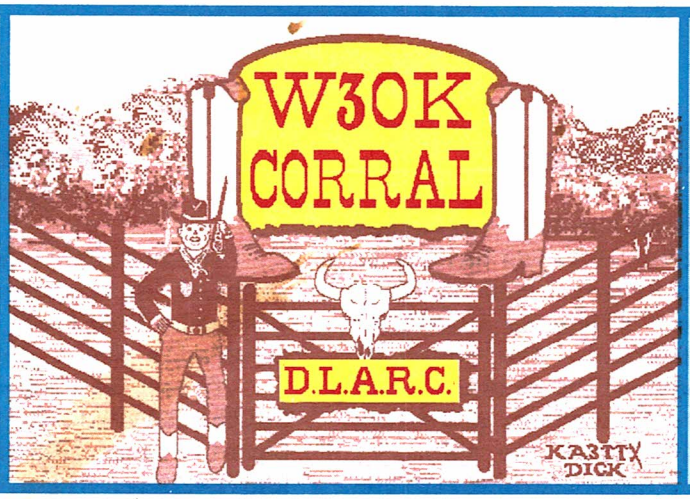
DELAWARE-LEHIGH AMATEUR RADIO CLUB, INC. W3OK

FEBRUARY 1991



SPECIAL SERVICE CLUB

ARRL Affiliated Club

CHRISTMAS CITY STATION BIG SUCCESS

W3OK CHRISTMAS CITY STATION
by Louise, N3GXV

The W3OK Christmas City Station Event was operated with success on December 22nd & December 23rd. Over 340 contacts were made, including 36 states and 9 countries. Contracts located around the country and the world have started sending their QSL cards and requests for the "Special Event Station" certificate that was offered with the Christmas City Station event.

A total of 10 operators worked the event and five of them liked so well the first day that the came back the second day for more fun. Special thanks and a Certificate of Participation go to the following operators: Vic, N3IQD; Bud, WA3BOM, Bruce 'Bali', KC3FC; Bob, WF3H, Dick, KA3MOU; John N3GVY; Ray, W3TDF; Dave, N3HKY; John, N3GXU and Louise, N3GXV.

In 1991, we will insure that QST announces our special December event and contacts plus locations will multiply.

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FEBRUARY MEETING TO FEATURE DESKTOP PUBLISHING
by Archie, KX5X

Have you ever wondered how Clarence puts the OK CORRAL together? Have you ever wished you could come up with some temporary or special QSL cards? Would you like to be able to use that computer for something other than packet or a check book balancer? Well bunky we're going to look at a few uses of that computer you bought (you know, the one you told the XYL would revolutionize your life).

The title Desktop Publishing is a very broad subject, so we're going to look at some of those applications you can use around the shack or QTH. These will range from a few ASCII text files you copy to the printer to make labels or QSL cards to some uses of very sophisticated WYSIWYG Desktop publishing packages with GUI ("gooey") interfaces. (If you don't know what those words mean: come on down, we'll teach you some new buzz words to dazzle your friends). You won't have to be a programmer to benefit, nor will you be bored if you are (I hope -- at least if I do put you to sleep, snore quietly and I'll try not to wake you).

The ideas that we hope to present aren't limited to one specific type of computer, though I'll admit that I usually use an "IBM" type computer. We'll show you how to use your computer, a printer, and a copier to make all sorts of useful forms, logs, QSL cards, or labels (that's only the beginning of the list not the end). I'll bring samples that you can copy to use and hints and kinks you can steal. So y'all come on down ya hea?!?

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IS THERE A RED LINE ON YOUR MAIL LABEL?

The new directory of paid up members will be included with the March issue of the W3OK CORRAL. The red mark indicates dues have not been paid. Send your check to treasurer KA3MNY. All unpaid members by Feb 8th will have their autodial removed. Dues still $12,00 and 3.00 for additional family members.

RAFFLE THIS MEETING

Annual Raffle

Get there early and settle up with Brownie, W3CJI, or Mail your money and unsold tickets to him as soon as possible. Stubs and money must be on hand before start of meeting

Northampton Community Community College
February 7, 1991 -- 7:30 PM
Talk in on 146.70

ARRL VEC TARGETS NOVICES

A new pamphlet describing the ARRL volunteer examiner coordinator program is being mailed to all new novice class licensees. New Novices have not necessarily had any exposure to either the League or the VEC program. The pamphlet describes the licensing upgrading process, how volunteer examinations are conducted, and notes the many services available from the ARRL.

Since July 21, 1984, the ARRL VEC has accredited more than 13,000 examiners, who have conducted more than 11,500 test sessions for some 140,000 people. As a result, 77,500 upgrades have been submitted to FCC.

On a related note, the FCC has announced that the maximum allowable reimbursement fee for a volunteer examination will be $5.27, starting Jan. 1, 1991. The ARRL VEC maximum will be set at that time at $5.25. There is no fee for the Novice examination.

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K2BPP OFF AND RUNNING AGAIN

Information from Dave Porter, K2BPP tells us that he is on a new job and operating well from his new location and looking for DLARC members.

His new job is on Ascension Island as an engineer for Raytheon on a NASA installation working at the transmitter site.

He of course has all his amateur radio gear and beams with him, and it sounds like he will be on a grand dxpedition for a few years.

Dave, who has been a speaker a few of our meetings and banquets will have more to tell us when he returns. He expects to have at least three trips home a year, and will be in touch, at least with Bill, K3ANS who will be keeping us up to date on his operations.

de Clarence, W3PYF

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FOR SALE

Complete HF Station: Sold separately or as a complete package. Kenwood 140S, $600. RS20A Power Supply $75. MFJ 962B Tuner, $190. Cushcraft R4 Vertical, $190. 5 Hustler mobile whips with bumper mount and spring, $75. Barker & Williamson, 80-40 meter trap dipole $25. Vibroplex Bug $60...Call Lee, WA3NSX @ 439-8108.

KANTRONICS KAM: Kantronics KAM. Verions 3. software with battery backup, and smartwatch..Only 6 months old. Complete with all manuals, cables. $275.00 Call Clarence, W3PYF @ 252-2109. Just returned from Kantronics, after checkup. Not Clarence just the TNC.

JANUARY VE REPORTS

by John, K3GQJ

The Delaware-Lehigh Amateur Radio Club VE session of January 4th had 11 candidates taking a total of 17 elements. There were 5 up-grades and 1 new novice.

Those who up-graded include **Bryan D. Smith, KA3WVB**, Tech; **John E Knapp, KA2LDX**; **David Evans, N3HQE**, Gen; **Victor J Celani, KA3YFW**, Adv; **Allen R Cerullo Sr.,KA3WLD**, Tech; and **Walter F. Tietz**, new novice. The VE's at this session were: NX3R, Hank; KO3M, Anne; K3GQJ, John; NE3K, Charles; WA3T, Robin; K3CP, Van. Next months VE session will have team 2 serving. 73

de John, K3GQJ

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THE GAVEL SPEAKS

by Ray, W3TDF

I could start out with, 'I have some good news and some bad', but, it's more like happiness and sadness, or joy and anger.

First the 'joy'. Our first meeting in quarters that would appear to be sufficient, with an almost capacity attendance. I couldn't have been more pleased. There had to be over 100 present. Probably a record.

Now for the anger. There seems to be an increase in testing, (kerchunking) on the repeater. Why would anyone test on a busy frequency? What are they testing? A new amplifier, or a new antenna? Are they testing a rig that is rock-bound to the repeater frequency, and they lack a dummy load. Hey, DUMMY (LOAD) ! Pay attention, now. There are 20 or 30, or more, people monitoring most of the time. You are annoying us! The machine is going to be shut down more and more. If you know who is doing this, you better whisper a warning.

Are you still with me? Do I still have your attention? Check the mailing label for a **RED** line. It means your dues are delinquent at press time. Get them in to Roy real soon, or you may be left out of the updated roster, AND, your autodial will be pulled.

I hope I can get my pleasant congeniality back before next meeting.

73, Ray.

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REMEMBER! MEETING IS AT THE NORTHAMPTON COUNTY COMMUNITY COLLEGE..FEBRUARY 7th..

JUST THE MINUTES
by Dave, N3EYT

The January 3rd, 1991 meeting of the DLARC was called to order by Ray, W3TDF, at 7:35p.m. A total of 89 members and guests attended the meeting held in KIVA Hall on the campus of Northampton County Community College.

The minutes of the December meeting were read and approved with one correction to the callsign of Gene Walsh, last months speaker. He is N2AA.

Roy, KA3MNY, read the Treasurer's report which was approved as read. A General licensing class begins on Monday, January 7th at the Greystone building. The next Novice class offered by the club will follow the current General class. However, the Lehigh Valley ARC is offering a Novice class this winter. The DLARC would like to welcome the following new members: KA3MQJ, John; and KA3YEQ, Kenny. A WAS Award was presented to Archie, KX5X for mixed/mixed operation. Congratulations, Archie!

The next several general meetings of the DLARC will be held in the Northampton Building at NCACC. Ray drew a nice map but directions should appear in the W3OK Corral as well. Ray, W3TDF, is also donating an old PA amplifier which was formerly used on the railroad. (I guess that's to keep us on the right track). The amplifier will be used in the Northampton room to spare the expense of hiring an NCACC technician. Steve, NS3L is offering technical assistance for the SKYWARN equipment. There may be another SKYWARN training session scheduled for the spring if there is enough interest Boyscouting's Klondike Derby is scheduled for February 9th at camp Minsi. Volunteers were requested and more than eight members present offered to help with communications for this Scouting event. The recent noise on the repeater has not yet been conclusively been identified. The club will seek the source of the interference and work cooperatively to solve the problem. Field Day 1991 is coming. The dates are June 22-23 and Bob, KU3K will chair the event. Plans are to operate as either a 3 or 4 transmitter class. We are looking for another used beam for Field Day operation. Alan, WO4H, said he has a TA-33 Jr. he is willing to donate to the club. Thanks, Alan! Ray, W3TDF, said the club constitution and by-laws need to be cleaned-up. A committee will be working on this task over the next several months as they correct grammar and usage and bring any proposed changes before the club. A motion was made by KD3SQ to make a club donation to the ARRL WARC '92 fund. The motion will be brought up at a future meeting for consideration by the club. Amy, KD3TI, ARES membership applications. Contact Amy if you would like to officially join this emergency services. The question of a DLARC lifetime membership was raised. After consideration, the DLARC board felt the club is not ready to attempt to establish such a membership at this time. A program on the Civil Air Patrol was presented by major Bruce Brinker and major Gene Egry.

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PATCHES AND PATCHES
by Ray, W3TDF

Back about August, when put to a vote for or against ordering QSO-Party Winner patches, there were at least 30 people in favor of it, out of about 60 in attendance at that meeting. With membership at 340+ I would have expected that the 50 patches ordered would have gone rather quickly. Only 26 sold so far! Where are all those participants of the party? Is $3 out of line? If I get orders for at least 15 more, then DLARC will at least break even. Send the money with a SASE (.25) to me with your check made out to DLARC and I'll mail it.

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HOW TO GET TO NEW MEETING PLACE

DIRECTIONS to Meeting at N'Hampton Community College. From Route U.S.22, take the Exit for PA-191, down ramp and turn right. Go North on 191 only about 2 city blocks, just past Kristy Shoes, and turn right on Brodhead Rd. Go to dead end and turn right on Hecktown Rd. You will then pass over U.S.22. Continue to 3rd street on left and turn onto Greenpond Rd. Go about 1/4 mile and turn right into the College grounds. Immediately turn left and proceed to Parking Lot 'B' or 'C'. The nearest building in front of you when parked, contains the Theater. Do not go up the steps, but take the tunnel to the front of the building and go in through glass door.

From Oakland Rd. enter College grounds and immediately turn right to parking lots.

IF YOU GET LOST CALL ON 146.70..SOMEONE WILL HELP YOU!

**** HELPFUL HINTS ON RFI ****

by Barry, KU3X

PART 1 OF 3

Television and telephone interference are probably the most important items that we have a problem with. There are many things that can effect RFI. They range from corroded rain spouting, wire rope wash line, or just a loose connector on the back of a television set. I would have to write a book to try to cover everything that can cause a problem. I don't have all of the answers, but here are a few.

Are you sure that you are one that is involved with the RFI problem? My wife received a call one Sunday morning from a neighbor a few doors away. It seems that they heard me in their church public address system and said that I should stop transmitting. The telephone rang ten minutes later and this time was told to stop using bad language and stop transmitting. At the time of the second call, I wasn't even home and I never use bad language over the air. As soon as you put up an antenna and the neighbors see it, you are the problem. I know of one ham who just put up an antenna system and didn't even have the radios hooked up. The phone rang and it was a neighbor complaining that he was getting into their television.

How clean is your station? Is everything grounded ? Are all of your ground connections tight? Make sure that you don't have any ground loops. Copper flashing makes a great ground buss. You can get flashing from almost any hardware store for about two dollars and fifty cents a running foot. Use the copper braiding from a piece of RG 213 or RG 8X coax for grounding your equipment to the ground buss. Each piece of equipment gets its own ground strap. Make them only as long as needed. Brute force A.C line filters are sometimes needed to keep RF from feeding back into the power lines. Another method that you can use is to wrap your A.C. line cord around a ferrite core. Wrap about eight turns of the power cord around an Amidon # FT-240-1240 ferrite core. You can also get an A.C. power outlet with surge protection and noise filtration built in. This can be purchased from Laneco for thirteen dollars, eight dollars on sale. It is nothing more than a seven outlet power strip with a metal-oxide-varistor for surge protection and a .22 microfarad capacitor shunted across the A.C. line. This is not a brute force line filter but it is a step in the right direction. Put a low pass filter after the radio and linear amplifier if you own an amp. Ground both filters with a piece of braiding. Do not expect the coax to do the grounding for you. Grounding and filtering are the first two things that the FCC will expect you to have taken care of. How are your RF connectors attached to the coax cable? There is only one proper way to put a PL 259 connector on coax. It must be soldered and soldered properly! A little tip on soldering these connectors on is to drill out the soldering holes to 5/32 " and then file the chrome away from around the holes. Look in the ARRL handbook if you need instructions on how to put connectors on. Also, use an antenna switch that grounds the unused antennas.

Barker & Williamson, Alpha Delta, and Daiwa all use this type of arrangement. Use a balun to stop your coax from radiating. There are only a few good baluns on the market. I found that the ones that are made by W2DU are about the best and are reasonably priced. They will handle up to 9000 watts and a tremendous mismatch. You will probably never be able to blow one of these up. You could destroy the W2AU balun with only 100 watts if you load the wrong antenna up on the wrong band.

Are you operating your equipment properly? Are you sure you are? I visited one ham station that was running a Kenwood TS 180 S that was driving a Dentron MLA 2500 linear amplifier. Next to the radio was a Kenwood SM 220 monitor scope, turned off. With the processor on full, he was showing me how much power the amplifier was putting out on SSB. The watt meter was not a peek reading meter and it was showing about 1200 watts out. I showed him how to use the trapezoid settings on the monitor scope and after setting the drive on the radio and loading the amplifier correctly, he was surprised to see that the wattmeter showed about 400 watts out on SSB. The voice peeks on the monitor were 1200 watts but the wattmeter doesn't show that. Read your manuals closely!

Make sure that all of the above areas have been taken care of before you try to correct other problems. You must clean up the source before you attack the results.

Next month I will discuss problems with televisions, television cable systems, and telephone interference.

de Barry, KU3X

****** DOES RF PROCESSING WORK ******
by Barry KU3X

This is answer to last months column by Digital Editor K9TBD

You bet it does! If you want an aggressive signal, you need a good processor. If you want to use a simple AF processor, you are not going to cut the muster. You need a good RF processor.

I have made numerous tests using the AF processor in the Kenwood TS 430S and the matching MC 60 microphone. Of the few times that any differences were noted, the difference was very little. This type of performance will not break any pileup. In 1975, if you went out and bought a Kenwood TS 520 or a Yaesu 101E, all you got was an AF processor. Very little, if any at all, changes have been made in AF processing since that time. Vomax and Datong came out with a very impressive outboard speech processor in the early seventies. Both units worked great but in 1980, when Kenwood came out with the TS 180S, the end was near for these units.

The TS 180S used dual filtering for SSB operation and had probably the most impressive RF processor at that time. KA8X, Ron Zander, and I were rag chewing one evening on 75 meters. He was mobile in Detroit, Michigan using his new TS 180S and I was in my shack using my TS 820. He decided to show me how good an RF processor his new radio had. I could not believe how well it worked. When he turned the processor off, I could hardly copy him. When he turned it back on, he was Q 5. I was so impressed, two months later I was the proud owner of a new TS 180S. To this day, the TS 180S is sought after by many hams for mobile operation.

I now own a Kenwood TS 930S and have made many on the air tests with the RF processor in this radio. There is a dramatic difference in audio when the processor is turned on. In all cases, I was told to let the processor on. The audio had more punch and sounded a lot better.

True contesters and DX'ers realize the need for good RF processing. The manufacturers of today have met their needs. Look at the Kenwood TS 940S, Icom 781, and the Yaesu FT 1000. These are all true contest radios and all have RF processors. Any harmonic overtones that may be generated by RF compression can easily be filtered out and the manufacturers have taken care of this for you. If you have an RF processor in your radio, and you are told that you sound terrible, then you are probably doing something wrong. Is your microphone setting correct? Is your compression setting correct? Are you using the correct microphone? When the manufacturer tells you to use only 10 DB of compression, and how to set the ALC level, they are doing that for a good reason.

A few words on microphones : If you use the microphone that is designed by the manufacture of your radio, you will usually get very good results. These microphones are tailored for rag chewing and still give good results when used with the RF processor. But, if you really want to break those pileups, then a Heil microphone or microphone element is in order.

Do RF processors work? You bet they do! Ask any real contester or DX'er. Good luck and I'll see ya in the pileups.

de Barry, KU3X

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**** CONTEST CALENDAR ****
by Barry, KU3X

Feb. 9-10	QCWA CW Party
	PACC Contest SSB and CW
Feb. 10	North American SSB Sprint
Feb. 11-15	School Club Roundup
Feb. 16-17	ARRL International DX Contest CW
Feb. 22	W1AW Qualifying Run
Feb. 22-24	CQ WW 160 Meter SSB Contest
Feb. 23-24	UBA CW Contest
Mar. 2-3	ARRL International DX Contest SSB

There are three important contests this month. Two of them being the ARRL International contests. One nice thing about these contests is that the entire world is trying to work you.

Next is my favorite, CQ 160 meter contest. This band has been doing great lately. There was a lot of good DX on the last ARRL 160 meter contest. If you want to hear some DX, listen around 1.825 to 1.837 MHZ. Remember, all you need is 100 watts and a sixty foot long sloper and you should be able to work the west coast.

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FOR SALE

Apple IIC with monitor, carrying case and Imagewriter printer and lots of software. Good for students as most schools use Apples. Call Greg, KB2ANG at 215 250-7162 evenings or 201 725-1606 days. $400.00 negotiable!

HOW TO USE AN OSCILLOSCOPE

By Van, K3CP

Elmer and Ima Lidd now resume their talk on oscilloscopes. You may remember that at the end of the last session, Elmer asked Ima what kind of pattern would be displayed on the CRT if both sets of plates had the same potential on them.

Elmer repeated the question and Ima responded, "You would see a straight line on the CRT and it would be at a 45 degree angle. Is that right?"

"Well, yes, that is correct, but only if the voltage were direct current (DC). What would be the pattern if the voltage were 60 cycle AC? Think about it and we will discuss that later."

"Let's get on with the design of the 'scope. So far we've discussed the placing of the voltage directly onto the plates of the CRT. This is alright if you are dealing with voltages in the range of several volts. We need to add a vertical amplifier so we can use it in the millivolt and microvolt ranges?

"The next thing we need to do is to provide a method of displaying a horizontal line on the face of the scope. One way of doing this is to provide an internal AC voltage (sweep) to move the beam across the tube. This sweep voltage is applied to the horizontal plates. It is called the internal sweep voltage. It causes the electron beam to sweep from left to right. This AC sweep voltage is generated by an internal oscillator. The frequency of this oscillator can be adjusted by the operator. The output of the oscillator is then amplified in a circuit known as a horizontal amplifier. The level of amplification is also adjustable--the greater the amplitude, the longer the line (trace) will be. We will now introduce a blanking procedure to blank (darken) the trace on its return to the left."

Ima interrupted, "Let me see if I have it right. The electron beam is made up of negative charges which are attracted to a positive charge. So when the AC sweep is on the positive side of its cycle, the beam is attracted to it and when on the negative half it is repelled. Is that right?"

"Yes", said Elmer, "that is right. Just remember that the polarities of the two horizontal plates keep changing. First the right plate is positive, then on the next half cycle the left plate becomes positive. If we reduce the frequency of the sweep voltage to a low enough value, the line will no longer appear as a line but as a series of fast moving dots.

"Now we have a horizontal line on the tube and you will remember that we said that if we put a voltage on the vertical plates, the line would be diverted, either up or down, depending on the polarity of that voltage. Again, this would work only if we were working with signals of sufficient value - several volts. To look at millivolts or microvolts we need vertical amplifiers. These amplifiers, like their horizontal counterparts, are adjustable. These adjustments are made with very accurately calibrated resistor decades. The amplifiers have enough gain so that signals of only a few microvolts will produce a meaningful deflection of the trace.

"The signal to be measured or diagnosed is usually applied to the vertical plates through the vertical amplifiers. Suppose we had a 1.5 volt flashlight battery and we wanted to measure it's actual voltage. We could, of course use a multimeter, but let's see what happens if we apply the 1.5 volts to the vertical input of our scope. The trace will be deflected an amount depending on the setting of the vertical gain control. It can be made to move 1/4 of the way up, or 1/2, or all the way...even off the top of the tube. So what good is this? We can set the vertical attenuator to 1 and the gain control (pot) so that we get a deflection of one and one half centimeters. Now we have calibrated the 'scope's input. We can now apply .015 volts (1.5 millivolts) to the input of the 'scope, but the deflection cannot be noticed because it's too small to move the trace. What do we do? We change the vertical attenuator from 1 to 0.01. Now the .015 voltage will produce the same deflection as the 1.5 volt battery did on the 1 scale. AND it will produce the same deflection for .015 peak AC voltage.

"That's a very good feature", continued Elmer. "We will see how to make use of it in our next talk.

"Now, let's get back to the question we talked about at the beginning of the meeting. What would happen if the two sets of plates had the same potential on them, but this time it was AC? That would produce a circle on the screen if the AC voltage were the same amplitude, phase and frequency. Think about it. See you next time, Ima." de Van, K3CP

DIGITAL COMMUNICATIONS
by Joel K9TBD
February 1991
Hard Carriage Return

Many may not have the foggiest idea of what this article addresses. Those who do not use a text editor or word processor on any machine - skip to the next article. For those that do - read on and by the end you may be 'right-on'.

For those who have an interest in this topic please make the effort to re-read my articles appearing two or three times a year in the newsletter with the titles like "ASCII the non-standard standard", "File interchange formats", etc.

Do you wish to give a text file to someone else? Do you use a Mac, a PC, a C-64, a VAX? Do you get bogged down in writing text because the word processor commands are so obscure? Then enter your text with a simple text editor which makes pure ASCII then later on import it to your favorite word processor to make it look pretty or check your spelling. That way you can concentrate on the job of writing and later do the editing.

ASCII stands for "American Standard Code for Information Interchange". Use it for information interchange as all computers today accept this 'de-facto' standard. If you do have text in a word processor format then do a save or print to disk in pure text or ASCII format with no imbedded printer controls or word processor controls in it.

Now to the 'hard carriage return': This is nothing more than a convenience for a word processor such as 'Word-Scar', 'Nerd-Perfect', etc. to denote the end of a paragraph. In ASCII this is nothing more than the character which represents a carriage return. In the past, all mechanical machines needed an end-of-line protocol consisting of a <carriage-return carriage- return line-feed>. The second carriage return was just timing to let the physical carriage have enough time to get back to the left margin. With modern devices which buffer and handshake, the end-of-line protocol became just a <carriage return line feed> or just a <carriage-return>.

A conflict arises when trying to use pure ASCII text which contains real end-of-line sequences <carriage-return line-feed>. The word processor thinks of this sequence as a paragraph boundary thus each line is a paragraph. It is most inconvenient for the user of a word processor to get rid of these "paragraph per line of text" in that each one must be deleted by hand as there usually is no global way to eliminate the extra return sequences.

On the other hand, many machines and text processors have a maximum line length of 256 characters and if the text did not have the 'hard carriage-return' the lines will become truncated and you will loose most of the text. This is the difference between "stream" and "record" handling. In order to help those who exchange text files I have written a small BASIC program called HCRSTRIP.BAS which will eliminate the line-by-line CRLF sequences but preserve paragraph boundaries which have two such sequences in a row. You may re-type this program from this article or download it from K9TBD-3.

For the most universal exchange of text files send them as pure ASCII with a CRLF (carriage return line feed) on each line. Do not make the lines longer than the recipients machine (i.e. 80 columns for a computer 72 columns for an RTTY machine). If the recipient wishes to use the text in a word processor (for which it is hard to eliminate extra CRLF sequence) just run my little HCRSTRIP.BAS program before importing it to your word processor. You may run this program more than once to continue to remove blank lines as it replaces the end-of-line sequence (CRLF) with two BLANK (space) characters and only issues a CRLF on occurrence of a null input line (CRLF followed by CRLF).

73 Joel, K9TBD

```
10 REM Hard Carriage Return Strip Routine
20 REM JABE, K9TBD, 12/90
30 INPUT "Input File Name";IN$
40 INPUT "Output File Name";OU$
50 OPEN IN$ FOR INPUT AS #1
60 OPEN OU$ FOR OUTPUT AS #2
70 A$=""
80 INPUT #1,A$
90 PRINT #2,A$;"  ";
100 IF LEN(A$) <= 0 THEN PRINT #2,""
110 IF LEN(A$) <= 0 THEN PRINT #2,""
120 IF EOF(1) THEN GOTO 140
130 GOTO 70
140 CLOSE #1
150 CLOSE #2
160 END
```

THE 5/8 WAVE ANTENNA

by Ray, W3TDF

About a month ago I overheard a conversation regarding the virtues and feeding of the 5/8 mobile antenna. So, here is my version of, 'everything you need to know' about this super antenna.

The optimum angle of radiation for a vertical antenna is the angle that gives the greatest coverage. It is a very low angle, and the engineers have determined that this angle is most easily achieved by the use of a 5/8 radiator. Now all that remains, (or so it would seem), is to figure the length and make this antenna. However, this is where the problem begins to rear its ugly head.

The feed impedance (for all practical purposes) of a half wave center fed dipole is 52 ohms. If you want to feed it at the end, then, theoretically, the feed impedance is infinity, (very high). It doesn't matter if the dipole is horizontal or vertical. A ground plane is basically the same as a vertical dipole, with the bottom half fanned out. It can be 1, or 2, or 3 wires (or rods), 1/4 wave or more in length, or a full disc, or 'plane' (as in groundPLANE), such as the roof of a vehicle. This type of antenna now exhibits a feed-point impedance somewhere between 20 and 50 ohms. We normally feed it with 52 ohm coax, and get away with it! So much for that.

Now, back to our optimum antenna, the 5/8 wave radiator. If you attempt to feed it you would find the impedance somewhere between 150 and 1000 ohms. So, now we have a problem. Since the feed impedance of a 3/4 wave radiator is approximately the same as a 1/4 wave, and since the 5/8 is close to 3/4 length, we must somehow attempt to fool the feedline into thinking that it is a 3/4 wave radiator. The way we do it, is, to add a small series inductance, which will electrically make the 5/8 radiator equal to an unloaded 3/4. Now the impedance is back down somewhere between 20 & 50 ohms. Now another problem rears its ugly head. By adding the series inductance we have introduced an inductive reactance. The solution is to ground the end of the series inductance, and feed the antenna via a tap on this inductance, at a point which will give 50 ohm impedance, and, to balance out the inductive reactance, we add a series capacitor at the feedpoint to the series inductance.

Proper selection of inductance, capacitance and tap-feed point will result in a superior antenna that matches your feedline. You need an SWR bridge, and a field strength indicator to arrive at the proper selection thereof. As a starting point use 4-1/2 turns for inductance, 1/2 inch diameter and 1/2 inch long, feed point tapped at 2 turns from ground end, and a 15pf capacitor.

A good source for the basics of one of these fine antennas is the mag-mount CB antenna. Most of these have a whip of 46 to 50 inches, which is ideal. Don't cut it, just use as is. If it ends up 1 or 2 percent longer or shorter than 5/8, is not important. These units are often available at hamfests fairly cheap. You have to disassemble the base and replace the existing 20 to 30 turn coil. Most of these have a pin near the bottom that is the feed connection to a tap on the coil, but they don't use the series capacitor. This may be difficult to include but is well worth the effort in final performance. Good Luck

de Ray, W3TDF

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BATTERY ALERT

A recent alert warned of the hazards of mixing alkaline and carbon zinc batteries. This combination created a pressure explosion great enough to split and blow the end cap off an explosion-proof flashlight. The Eveready Alkaline Energizer was the only battery of the seven different styles inspected that incorporated a warning label concerning mixing battery types. Also it appears as though all major manufacturers are converting from carbon zinc to alkaline, which has increased the hazard of mixing, especially with the green jacketed military batteries which contain no warning labels of chemical description.

from World Radio

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NEW INTERFERENCE HANDBOOK

from ARRL Section Letter

The FCC has recently released the 1990 edition of the *Interference Handbook.*

The book is divided into three parts: Interference to television reception, interference to other equipment and other equipment. For your copy, drop a note to ARRL Field Services, 225 Main St. Newington, CT 06111..

LIGHTNING: NATURE'S ZANY ZIG ZAGS

Ancient Greeks and Romans thought lighting was a weapon of the gods. In some countries, places struck by lightning is considered cursed.

But what is it really?

According to *Webster's Lexicon Dictionary*, lightning is a "discharge of atmospheric electricity from highly negative particles from a cloud to earth or to another cloud, resulting in a flash of light." Lightning that strikes the earth is composed of a single or series of electrical charges called "strokes." An increase in pressure along the path of a lightning stroke, with a rapid heating and expansion of the air, is what causes the "boom" we know as thunder.

Although the core of a lightning bolt is only one-half to three-fourths of an inch in diameter, it represents pure electrical energy. In fact, the super-heated air surrounding the core may reach temperatures as high as 54 thousand degrees Fahrenheit, and produce up to 30 million volts of electricity. So it's no wonder lightning can seem brighter than the sun.

It's also quick, which is the reason we **see** lightning before we hear the thunder. The rule of thumb is that since it takes five seconds for sound to travel one mile, we can compute how far away lightning is by counting the number of seconds between the flash and thunder and dividing it by five.

Lightning can appear in several forms. Lightning is a single, jagged line, called **streak** lightning. A flash that trails off into a dotted line as it fades is known as **chain or bead** lightning. **Forked** lightning is a lightning flash in which several branches are visible. **Ribbon** lightning is created when wind separates the strokes of a flash, causing them to form parallel lines across the sky. The lightning many of us call **heat** lightning is simply too far away for its thunder to be heard. **Sheet** lightning, which usually lights up large areas of sky, is hidden by clouds or too far away to see the individual strokes.

Lightning strikes are far more common than most people realize. Meteorologists estimate that up to 44 thousand electronic storms pelt the earth daily, with anywhere from one thousand to two thousand lightning strikes per second. AS many as 30 thousand buildings are damaged or destroyed by lightning annually. The Empire State Building, for example, is said to sustain 30 to 48 lightning strikes each year. Butr, it should be noted, that skyscrapers with continuous steel framing, and building with properly grounded lightning rods, offer excellent protection against lightning.

Since lightning is a killer, it's important for parents to teach their children the proper precautions to take when a storm is brewing. Make no mistake about it, lightning is attracted to water. Backyard pools, baths, showers--even puddles on the lawn--should be avoided. The same goes for stoves, dishwashers, washing machines and gas-lighted fireplaces, because lightning **can** travel along water and gas lines. Except for an emergency, it's not a bad idea to avoid the telephone.

Anyone caught outside during a storm should seek shelter immediately, preferably inside a building. The interiors of cars and trucks are somewhat safe spots to be in, provided the tires are well inflated and the windows are rolled up. Tall trees, utility poles and just about anything made of metal should be avoided.

Golfers **definitely** should be wary of storms. Because of the prevalence of trees on a golf course and so much metal associated with the game, many lightning deaths occur during the playing of this sport.

Dangerous as it is, lightning serves a purpose in nature's scheme of things. By burning the air around it, a bolt causes oxygen and nitrogen to unite and form nitrogen oxide. When combined with water and oxygen, the nitrogen products that is created enter the soil and become essential ingredients for all plant life.

Dangerous to man, helpful to plants. It's lightning; nature's very own fourth of July celebration.

This article submitted by Norm, K3NZ and is from a Chrysler Magazine.

MORE INPORTANT IS WATCH YOUR RADIOS AND COMPUTERS BEFORE THEY GET FRIED BY A SUDDEN JOLT.
(PULL THE PLUGS)....







All Amateur Radio Operators are invited to participate in the DLARC, RACES & ARES nets on 146.70 W3OK/rpt. with an alternate of 145.11, W3PYF/rpt.

The Nets are held on Sundays at 9:30 AM and on Wednesdays at 7:00 PM.

+++++++ DLARC INFORMATION LINE 820-9110 ++++++++

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1991

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All regular meetings of the D.L.A.R.C. are held on the first Thursday of each month at 7:30 PM at the Northampton County Community College

TALK IN ON 146.70

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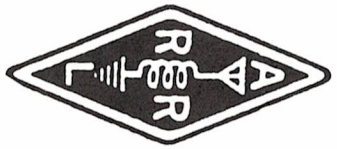



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