SECOND CLASS MAIL Postmaster, see page 3

CENTRAL OKLAHOMA RADIO AMATEURS
COLLECTOR AND EMITTER
50¢

VOL. 12 AUGUST 1986 NO. 139

Perhaps you are wondering why your Collector & Emitter showed up so early this month? Well I decided to get it out a week early and give you a chance to get your PRE REGIST- RATION form in, as the cut off is 23 July and you should have a day or two to get them in... if you hurry. Try it any way.

MORE FIELD DAY REPORTS INSIDE

PRACTICAL WIRELESS TELEGRAPHY
A REVIEW

Back in 1917 Wireless Press, Inc. published a book written by Elmer E. Bucher, an instructing Engineer of the Marconi Wireless Telegraph Co., of America. Now, you may think that, what with the rapid and continual progress in the electronic art, anything written in 1917 would be just a quaint bit of history; crude history at that.

Thumbing through the pages "Bucher" devotes to fundamentals will prove to you that his book could do well (in that section only) as a text to be used in Technical Schools in the year of 1986!! Oh, there are a few changes in nomenclature, like CONDENSER now being CAPACITOR. And, you might blink your eyes at finding CENTIMETER being used as a unit of inductance as well as a unit of linear measurement; with one CENTIMETER equaling one NANOHENRY. Then, also, a BILLI-CONDENSER might be confusing until you concluded that it was just a padding "CONDENSER" used for reaching a lower frequency. Of course, you'd have to get used to thinking in terms of wavelength instead of frequency.....and consider 300 meters as a short wavelength; with 5000 to 30,000 meters being the bands for serious long distance communication. All in all, though, you'd conclude that electrical theory, as applied to radio communication, is relatively timeless.

But "Bucher" writes of PRACTICAL WIRELESS and some of the 1917 practices are startlingly MODERN!!.

Let's consider just one; the WAVEMETER. Now for newcomers, a "wavemeter" may be described as a Grid-Dip meter with the power flipped off. "Bucher" used many indicators for showing resonance; including small light bulbs, neon bulbs, thermocouple meter, crystal detector plus meter, etc. These "Wavemeters" had calibrated variable "Condensers", enabling them to be used not only for frequency determination on either active or passive circuits, but also, in conjunction with a simple buzzer as a source of impulse power, to determine both capacitance and inductance. In reading "Bucher's" applications, you'd think you were reading instructions for a 1986 Antenna Noise Bridge!!

Antennas are timeless. "Bucher" tells about the Vertical, the Umbrella (or pregnant monopole), the Inverted L, the T, and the Bellini-Tosi (a loop antenna). And grounds! WOW!; any of the grounds described would be the envy of a modern Radio Amateur.

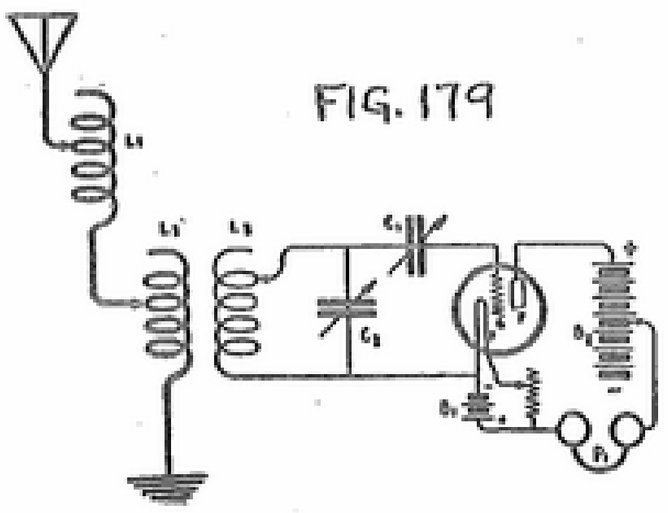


FIG. 179

Some things were not so modern, though. Detectors, for one. Although "Bucher" mentions (and even gives brief descriptions of) several types, he and the Marconi Company, favored one above all others. Here are some mentioned.... The Marconi moving magnetic field worked quite well on low frequency signals but still was not used too often used by Marconi stations. The electrolytic detector had some good points (yeah, you could make a pun out of that, if you wanted to) but was never popular. Ditto the Fleming Valve (a simple thermionic diode). Of course, there was the triode vacuum tube, too, and I'll have more to say on that later. But, Marconi took a very dim view of vacuum tubes; prefering semi-conductor diodes.

There existed a numerous variety of semi-conductor diodes, or crystal detectors as they usually were called. Some of these were constructed by having two dissimilar natural crystals in contact; others used a rigid steel contact point. A very few used the cat whisker light spring contact. But, the one favored by the Marconi Company was the Carborundum crystal.

The "Carborundum" detector was not the most sensitive, but it was very stable. Used without a polarizing battery, it was inferior to other crystals, but with the battery connected in the correct polarity, it showed it's true worth. Now, here's an interesting point: It appears that people did not know what polarity a particular detector required; necessitating polarity reversing switches in the local battery circuit.

Now let's look at the triode vacuum tube and maybe get an idea why the Marconi Company held it in such low esteem. Fig. 179 (which follows) shows how it was used. Please observe that no grid resistor was used.....perhaps poor insulation took care of that well enough to prevent blocking! And note, too, that no by-pass capacitor was used in the plate circuit.....and that this omission was compounded by placing the "B" battery in the "Hot to RF" portion instead of in the near-ground portion. In other circuits, this practice was followed even in the grid circuit, with a "C" battery at the grid and no by-pass

(CONTINUED NEXT PAGE)

LAST CHANCE *To Pre-register* **HAM HOLIDAY/ARRL WEST GULF CONVENTION**

capacitor.....plus probably having the battery on the floor ten feet away from the receiver! Note, too, the variable grid capacitor, a useless complexity; one that was carried on into the 1920's, as I can well remember.

"Bucher" called all vacuum tubes OSCILLATION VALVES, even when used in non-regenerative circuits. And, when they were in regenerative circuits, these were called REPEATER circuits. He also reproduced a REFLEX circuit; an audio repeater.

Now take a look at Fig. 288 (to follow) taken from paragraph 220. If this showed a grid capacitor plus a grid resistor and employed eight volts on the filiment, a 1922 issue of QST would have called it the "Three-Coil Meissner Circuit". And if you built one up today, making it mechanically stable, it would put out a wholly-acceptable radiotelegraph signal!!

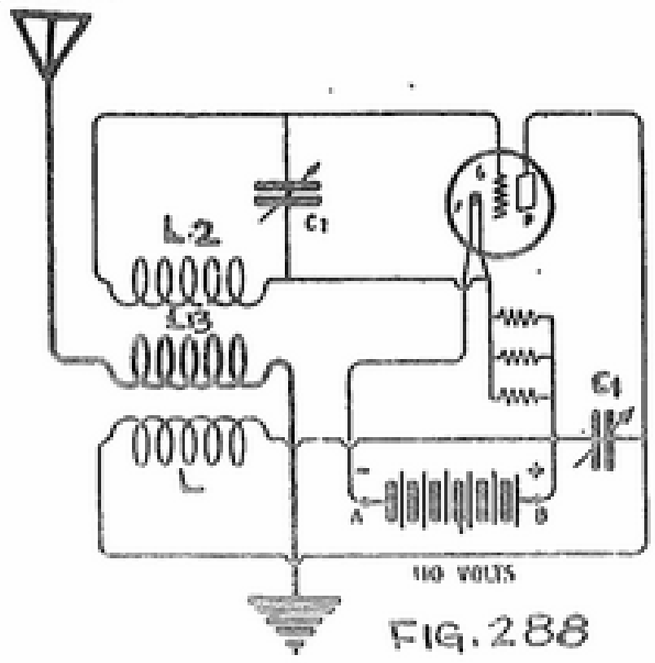


FIG. 288

Bucher, though, taking his cue from the Marconi Company, favored other methods of generating continuous (or undamped or sustained) waves. Here's his list:

(1) The radio-frequency alternator such as the Alexanderson and Goldschmidt types.

(2) The Poulsen or Deddell arc generator.

(3) A battery of vacuum valve tubes, such as the General Electric Pliotron Oscillators.

Take note of where he rates the VT!!!

Figs. 278 & 279 (to follow) show the arc transmitter circuits. May the Good Lord have mercy on the soul of any operator who got careless in keying or who touched the antenna of the "Modern Arc Transmitter". Take note of the 500 volts DC between key and ground or between antenna and ground.

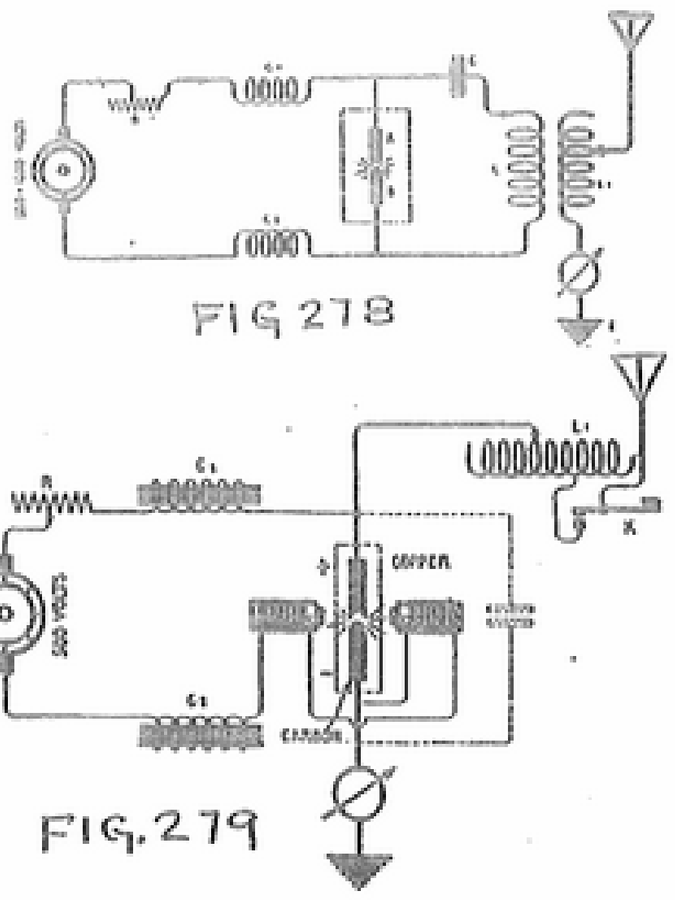


FIG 278

FIG. 279

Spark, of course, was Marconi's love and therefore the main topic of a book written by a Marconi company employee (in this case, Elmer E. Bucher). If there's room in this C&E issue, I'd like to show you Figs. 246 & 247. The latter is the front view of a 2KW spark transmitter; one having a choice between a quenched spark gap or a rotary spark gap. The former (Fig.246) is the fundamental schematic wiring diagram of that transmitter plus the Model 106 receiver, which was its usual companion.

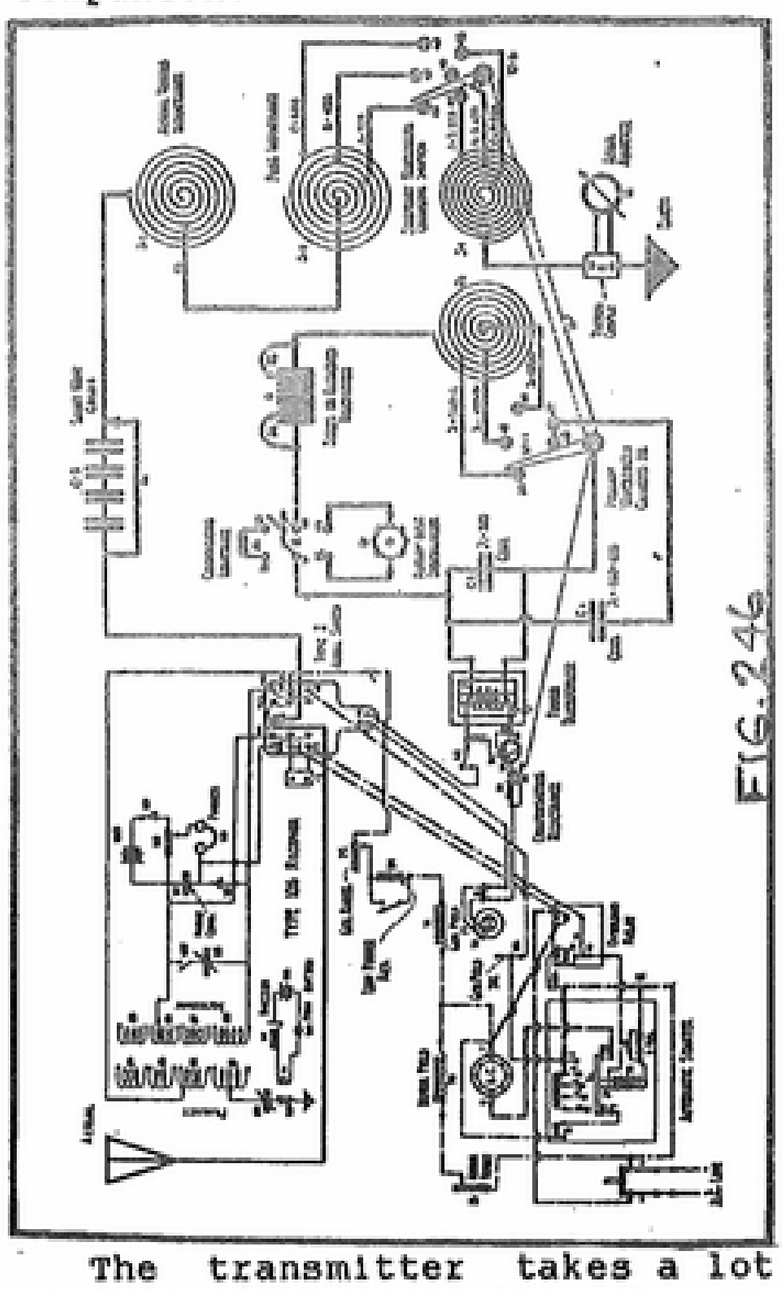
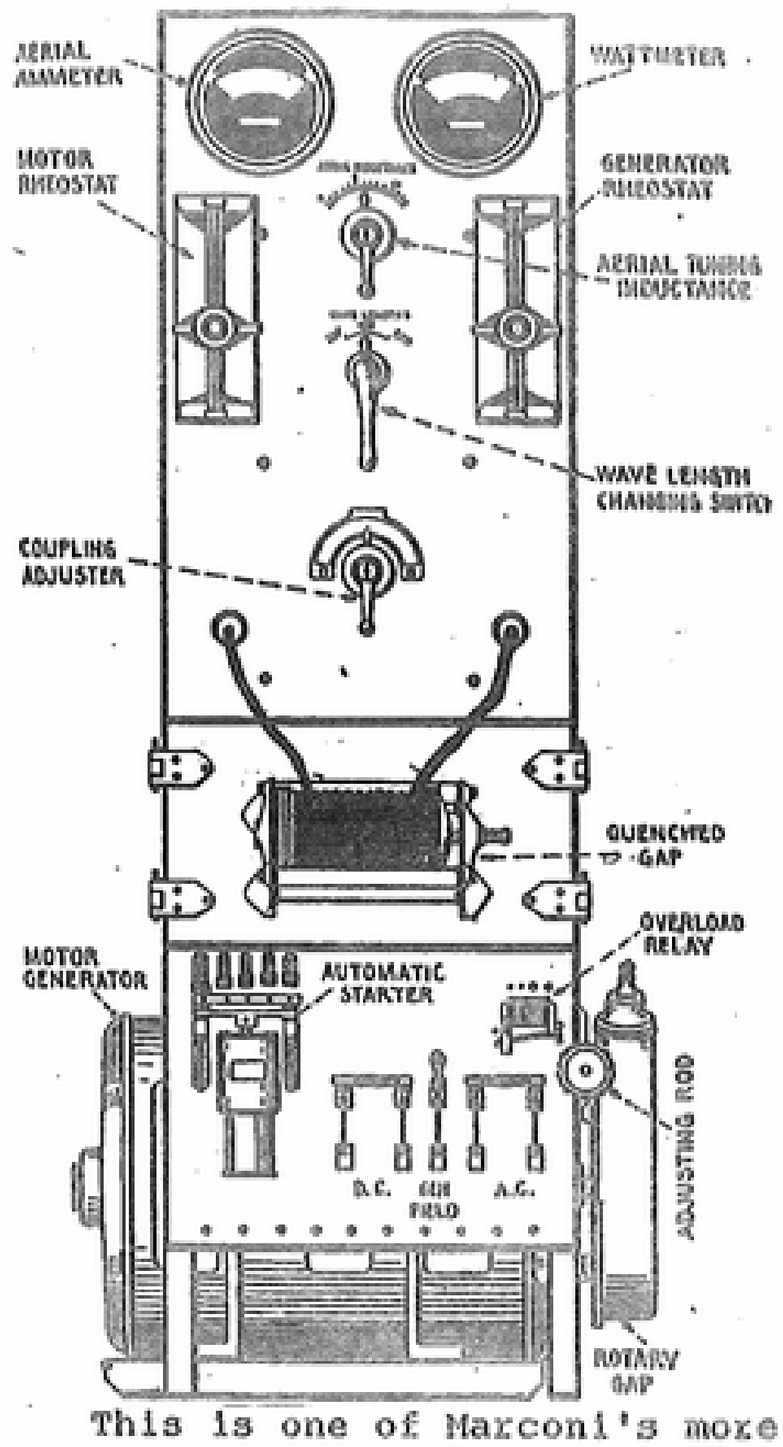


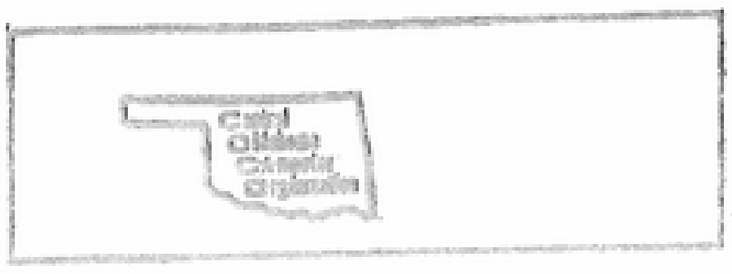
FIG. 246

The transmitter takes a lot of wading to get through, so lets take a look at the receiver. There's a tapped coil plus a series variable capacitor for antenna (or primary) circuit tuning. Another tapped coil plus a variable capacitor that can be switched in or out takes care of secondary tuning. The semi-conductor detector system looks fairly modern until one notes the battery and phones being in the "Hot to RF" part of the circuit....."think of the body capacity affect on tuning!!". Bear in mind that these are FUNDAMENTAL CIRCUITS; the actual ones are/were much more complex!!.



This is one of Marconi's more simple receivers. A more complex circuit employs two carborundum diodes in parallel to RF but with biasing circuits so as to have one biased on the quite sensitive portion of its characteristic curve; the other on a less sensitive portion. With an incoming signal of normal level, only one conducted well; the signal came through. With a strong signal, such as a crash of atmospherics or a neaarby spark transmitter, the second diode was pushed up into the more responsive part of its curve; its rectified signal output became very nearly equal to that of the other diode. As these two audio signals were of opposite polarity, one blocked the other. And here I thought James Lamb invented the "Hole of Silence" noise suppressor in 1936!!(just by coincidence, there's an article on "Lambs" circuit in the current issue of

(CONTINUED ON NEXT PAGE)



President Sam Murr called the meeting to order at 9:55 AM on July 12, 1986. Over 110 members and guests attended.

Old Business

1. I discussed the latest news on CoCoFest '86. Once again, I requested volunteers to help the day of the event. Several people responded favorably, but we still need some more to make CoCoFest an overwhelming success.

New Business

1. Several of the entrepreneurs in attendance plugged the merchandise they were selling. The booty included Tom Mangham's handy peripheral switches @@22.50; two double-sided disk drives with J&M controller for the remarkably low price of $325 (talk to Bob Pace); and both new and used diskettes available from yours truly.

2. This month let's extend a welcome to new (and renewing) members John Parish, Ron Bahner, Rick Tobiason, Richard Foreman III, Merrill Scott, Jr., and Brian Davis.

3. Speaking of members, what's become of Paul Asplin and Dan Kolakowski? We miss you. Come on back.

Hardware Problems

1. President Sam asked the attendees if they would be interested in seeing a presentation on EPROM burners. Those assembled mumbled their approval, but the date's still up in the air.

2. Lee Lash and his son encountered a disquieting problem recently with the younger Lash's gray box CoCo. After running normally for a while, suddenly every command generated a syntax error. They tried resetting the machine, turning it off and then back on, unplugging the disk controller and reconnecting it, etc. -- all to no avail. The problem didn't resolve itself by the next day either. Several people were chomping at the bit to offer advice on this problem. Tom Manghan believed the problem to be a hot SAM chip. He recommended replacing it (cost: $10-19, depending on the dealer). Holly Holcomb suggested affixing a piece of metal to the top of the chip and bending it so that it makes contact with something metallic on the inside of the chassis. (I don't know what this is supposed to do, but I'm sure it's based on sound electronic theory.) Jim Seale cautioned people to avoid using double-sided tape because it's an insulator. Epoxy or super glue would be better choices. Bob Pace followed a completely different train of thought. Citing his years of experience in dealing with electronic eccentricities, he posulated that the problem lay in the CPU chip. He recommended replacing it. Lots of luck, Lee, in resolving your problem.

3. Ron Folk warned those considering buying a floor sample Color Computer to have the salesman install a disk controller in the RS-232 port to insure that the port hasn't been damaged by rough handing in the store. He's speaking from experience, folks.

4. Tom Mangham showed the internal board of a Korean-made 16K CoCo and passed it around for closer inspection. Robby Runyon pointed out that the Korean model is equal in every way to the Japanese and Taiwanese versions. Tandy simply cut the price by using cheaper Korean labor and by reducing the number of chips.

Software Problems

1. Steve Moore found a bug in the BASIC loader of ADOS. David Burkleo advised him to download a program called CUST from COCONET. CUST should correct the problem.

2. Rosetta English experienced another FC error, this time in NAME THAT TUNE. She received an explanation.

3. Someone was curious about LOADing with offset, so Sam Murr explained it to him. Bill Holland answered the follow-up question concerning loading a program at a lower address than it normally would load in. (You could think of it as a "negative" offset.) Use the old wraparound technique to achieve this result.

4. David Coburn wondered if one person with a 35-track limitation in his DOS could read the first 35 tracks of a diskette upon which someone else had written 40 tracks of data. Bob Pace said that it depended on whether or not all granules in a particular file were in the first 35 tracks.

5. David's next question concerned the formatting process. He had heard that RS DOS formats track 17 first, then proceeds in both directions, whereas ADOS formats tracks 0 through 39 in order. Bill Holland confirmed David's suspicions. Bill added that the method employed by the authors of these two DOSes was purely a matter of taste. Supposedly, Radio Shack thought it more efficient to begin at track 17 because it would reduce head movement.

6. Bill Holland reported on a fix for the MS DOS - CoCo migration program. When transferring an ASCII file from an MS DOS machine to a CoCo, frequently the file doesn't print out accurately. Somehow, the file picks up garbage during the transfer process. To correct the problem, read the file into a word processor and strip off the garbage at the end. Then it should print properly.

7. Merrill Scott had a question about syntax errors. He had a multi- instruction line which appeared okay, but was the object of a syntax error upon running the program. One suggestion was to break down the multi-instruction line into several single-instruction lines to pinpoint the exact instruction generating the error. Another remedy was to employ the debugging commands TRON and STOP.

8. Byron Hutto was having problems with KEEPTEXT, a program to format text into two neat columns. He could enter text using KEEPTEXT and everything worked okay. However, when he read in a disk file created by another word processor, KEEPTEXT went haywire, printing words all over the page in no order. Harold Todd suggested that he try using VIP WRITER, which allows printing in two columns. Joe Harding recommended the old cut and paste method.

9. Miscellaneous tidbits: a program called OFFUP3 will allow you to dump ROM packs to disk... When modifying ADOS 1.0, don't overwrite the "0" from the version number in memory or you run the risk of bombing.

Doorprize Winners

The big news this month is that the Gilliland family tied the Roberts clan for the most prizes won. Special thanks to Ron Sonheim for donating many

1 AERONAUTICAL CENTER ARC

MEETS: FIRST THURSDAY, FLIGHT STANDARDS BUILDING, FAA, S. MACARTHUR

PR	JACK IHAN, WB5SVH	677-8537
VP	TOM MANGHAM,K5LDI	677-5291
SE	GLORIA SEIGNIOUS, WB5JPU	722-1740
TR	BOB PACE, WA5CJG	376-3569
EDITOR:	GLORIA SEIGNIOUS, WB5JPU	722-1740

2 CENTRAL OKLAHOMA VHF CLUB

MEETS: 10:00AM THIRD SATURDAY, RED CROSS 10TH AND HUDSON (BACK DOOR) OKLA CITY

PR	JERRY METHORE, KD5IS	524-5080
VP	HUGH BENSON, KA5DGY	946-0023
SE	JOE BUSHELL, K5JB	732-0676
TR	ELLARD FOSTER, W5KE	789-6702
EDITOR:	JOE BUSHELL, K5JB	732-0676

3 MID-OKLAHOMA REPEATOR, INC

MEETS: 8:00PM FIRST TUESDAY, OKLAHOMA CIVIL DEFENSE WILL ROGERS BLDG., STATE CAPITOL

PR	DOC BOWERS, KI5W	942-7738
VP	TIM RAUBCHER, KA5HUG	848-9910
SE	MIKE SAMBUCO, KA5TSD	672-9176
TR	SID GERBER, W5KOZ	737-1050
EDITOR:	MIKE SAMBUCO, KA5TSD	672-9176

4 OK CITY AUTOPATCH ASSN.

MEETS: 7:30PM THIRD TUESDAY. OKLA CITY FIRE TRAINING CENTER. 800 N PORTLAND

PR	DON ROOKER, WD5N	721-2119
VP	DON SAUNDERS, WD5ISS	721-0404
SE	CHARLES HOFFERBER, N5FMU	340-4468
TR	ART HERNANDEZ, KF5DK	354-9724
EDITOR:	DON ROOKER, WD5N	721-2119

5 OKLAHOMA UNIVERSITY ARC

MEETS: 7:30PM SECOND TUESDAY (SEP-MAY) 119 WILSON CENTER. 1334 S JENKINS

PR	LUKE HOAH, KA5BAY	325-1775
VP	JOHN WUSTENBERG, KE5N	325-2382
SE	PETER RICHESON, KA5COI	329-3217
TR	GREG SMITH, KA5LIN	366-1641
EDITOR:	GREG SMITH, KA5LIN	366-1641

6 ALTUS ASSOCIATION

MEETS: 7:30PM SECOND THURSDAY NORTH MAIN FIRE STATION (CD) ALTUS

PR	DWIGHT DENNIS, WB5KRH	482-2498
VP		
S/T	MIKE SCHENKLE, N5VIU	482-1797
EDITOR:	MIKE SCHENKLE, KB5IN	482-1797

7 BICENTENNIAL (76ers) ARC

MEETS: 7:00PM SECOND TUESDAY. OG&E BLDG. SE 3RD & E. K. GAYLORD BLVD.

PR	DONALD DUCK, AE5N	691-4199
VP	TED VANLANINGHAM, WD5JHT	262-1675
SE	JERRY SPROUL, N5AUH	354-2061
TR	TOM WEBB, WA9AFH	737-6716
EDITOR:	JIM SEALS, KB5IN	381-2005

CENTRAL OKLA RADIO AMATEURS

MEETS: 7:30PM FOURTH TUESDAY. RED CROSS BLDG. 10 & HUDSON OKLA CITY (BACK DOOR)

PR	DON SAUNDERS, WD5ISS	751-0404
VP	JIM BUSHELL, N5BEQ	236-0368
SE	KATHY WHITED, WB5NDO	799-1457
TR	SUSAN ST LAURENT, KF5LG	324-8180
CON/CON:	CHARLES HOFFERBER, N5FMU	340-4468

9 WHEATSTRAW ARC

MEETS: 2:30PM SECOND SUNDAY. LOCATION VARIES. SEE CLUB SECTION FOR DETAILS.

PR	JOE GARLAND, NA5FLT (CALUMET)	893-2660
VP	JOHNNY FISH, K5GBN (CALUMET)	893-2227
S/T	GEORGE KABCHINO, K5GGL (OKARCHE)	263-7614
EDITOR:	VIRGINIA BENEDA, N5END(WATONGA)	623-7935

19 OKLA INDEPENDENT AR

MEETS: 7:00PM SECOND TUESDAY SOUTHWESTERN BELL IFFICES, PONCA CITY

PR	DAVE WHITE, WW5LUI	765-5707
VP	VERNON TREIBER, N5ANV	767-1571
SE	GLEN BISHOP, JR, KA5PUB	767-1031
TR	BIZ NICHY, WD0HCO	762-3297
EDITOR:	DOUG EVERITT, N5DUB	359-0069

11 EDMOND AMATEUR RADIO SOCIETY

MEETS: ODD MONTHS, 3RD SUNDAY, 2:00PM, EDMOND EOC. DINNER, EVEN MONTHS, 3RD FRIDAY.

PR	BOB MCCOY, JR.,W5BUJ	348-2032
VP	LEE VAUGHN, KA5WIS	348-2961
S/T	AMBER THOMASON, KA5VEK	478-4615
EDITOR:	AMBER OR BOB	

12 QUARTER CENTURY WA

MEETS: QUARTERLY AT VARIOUS PLACES.
NET: 3855 kHz SUNDAY AT 8:00 AM.

CHN	ROBERT RUNYON, AA0O	373-1818
VCH	GENE NAILEN, K5DLE	341-0289
S/T	HOWARD BAKER, W5AS	721-5453
EDITOR:	ROBERT RUNYON, AA0O	373-1818

13 KAY COUNTY ARC

MEETS: 7:00AM THIRD THURSDAY PIONEER DRIVE-IN BANK, PONCA CITY OK

PR	DAVE LAND, KD5FX	762-8616
VP	STEVE SCOTT, KA5S6K	762-0117
S/T	HARRY BEATTIE, WD5DPR	765-3862
EDITOR:	CHARLIE NORTH, N5EYD	765-8136

14 CIMMARON ARS

MEETS: 7:30 PM THIRD THURSDAY. N5FUO RADIO SHACK 827 S 13, FAIRVIEW

PR	STEVE SCHOONMAKER,N5FUP	(405) 886-3274
VP	BILL SIMPSON, N5HQX	(405) 883-5523
SE	NADINE PAINTON, N5FHH	(405) 764-3599
TR	BETTY DAY,KA5RTW	(405) 227-3462
EDITOR:	JACK DAY,WW5Z	(405) 227-3462

15 SOUTH CANADIAN ARS

MEETS: 9:30AM SECOND SATURDAY. RED CROSS BLDG. NORTH OU CAMPUS. NORMAN

PR	JEFF WYKE, KE5EB	329-6762
VP	FRANK RIZZO, W2OCH	321-2899
TR	MONTE BATEMAN, WB5RZX	329-7485
SE	LINDA BRANDT, N5DWN	321-5081
EDITOR:	DAVIS EGLE, KD5IT	321-7570

I bet that you could sell an ad for the C&E. They are just 45c a square inch. Business cards are only $30 a year. Try it.

VOL. 12 AUGUST 1986 NO. 139

16 EDMOND AMATEUR RADIO CLUB

MEETS: 7:00PM SECOND MONDAY. SEE CLUB SECTION FOR LOCATION AND TYPE

PR	MARK NORTHCUTT, WD5DYI	755-4672
VP	BOB MOORE, KA5ETA	799-1765
S/T	KAY NORTHCUTT, WA5DYJ	755-4672
EDITOR:	MARK NORTHCUTT, WD5DYI	755-4672

17 OKCPM USERS GROUP

MEETS: 7:30PM, SECOND THURSDAY OSU, ROOM 307

PR	WILLIAM COOTER	
VP	JIM WHITE	364-5289
S/T	JOY MELTON	789-0280
EDITOR:	WILLIAM COOTER	

18 GREAT PLAINS ARC

MEETS: 7:30PM FIRST TUESDAY WOODWARD PUBLIC WORKS BLDG.

PR	MINDLE HATCHETT, WA5PLN (FT. SUPPLY)	766-3561
VP	LEWIS PATTERSON, N5KFK	256-2111
SE	LOIS FORD, KA5PYA	923-7683
TR	FREIDA PATTERSON, N5EOX	256-2111
EDITOR:	LOIS FORD, KA5PYA	923-7683

TRI-CITY AMATEUR RADIO CLUB

MEETS: 1ST THURSDAY OF THE MONTH.
PLACE:

PR	ROBERT DOLTON, KA5RHU	379-2369
VP	RON PHILLIPS, WB5UPU	382-1856
S/T	J. B. BILLS, KE5HU	379-3992
	PO BOX 655, HOLDENVILLE OK 74848	
EDITOR:		

20 ARDMORE ARC

MEETS: 7:30AM 2ND SATURDAY. CORRAL RESTAURANT
ID INFORMAL: EVERY WEDNESDAY, 221 9TH NW

PR	GENE SOUTH, WA5IJA	223-8252
VP	HOWARD ROBINSON, WB5FAJ	223-5726
SE	JIM CHILCOAT, W5JCX	226-6816
TR	JOHN MERLYN, WD5FZO	223-9543
EDITOR:	JACK GANT, W5GN	223-2619

10 COCO

MEETS: 9:00AM SECOND SATURDAY, RED CROSS BLDG. NW 10 & HUDSON. DUES $10.00 PER YEAR

PR	SAM MURR	324-6443
VP	TOM MANGHAM, K5LDI	677-5291
S/T	MARTIN SCHIEL	670-6891
EDITOR:	MARTIN SCHIEL	670-689

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EDITOR: Joe Harding, WA5ZNF 737-1044
CIRCULATION: Bob Graham, WB5HSV, 677-8685

Minutes of July Meeting

Will appear in next month's C&E. This issue will be pasted up the night before the club meeting. Since August is the month we normally have a watermelon feed, I suspect the club will get in cahoots with the ACARC to host a watermelon feed. Keep tuned to the 2 meter repeaters for the latest update on that. Joe, K5JB, Sec'y

Packet Radio ROMblings

This last month saw some hardware tinkering with the TNCs in the K5JB hamshack. Actually, I think the term is "firmware" because it isn't hardware and it isn't software. I changed EPROMs (erasable - programmable read only memorys) in both the TNC-1 and TNC-2 TAPR terminal node controllers. Both changes resulted in some differences in the ways they operated.

I finally succumbed to the nagging by J, KBOQJ and burned some EPROMs to get the TAPR TNC-1 to run WA8DED code. The reason I had not been too interested in doing this before was that the WA8DED program commands and responses are completely different from those used by the TAPR designs and I was reluctant to have to learn something a bunch of new commands. I finally tried it however, and it has been fun messing with the TNC using the 'DED code so I thought I would make a report.

The most maddening thing about a TNC-1 is when it is connected, it stays connected, unless someone disconnects it. If that someone is operating over a weak linking path, he may disconnect on his end from excessive retrys but the TNC he is connected to remains connected until the cows come home. If someone else comes along and tries to make a connection to the connected TNC he gets a "busy" response. If he doesn't hear any activity he can pretty well assume that there has been a unilateral disconnect by whoever was connected to the busy TNC. In the olden days, one could guess who might have done it and assume his call. After connecting and disconnecting to the busy TNC he would resume his own call and proceed to make a connection. No more! With hundreds on frequency now, from as far away as Louisana, there is a real good likelihood that unilateral disconnects are going to happen and one would never guess who did it so the locked-up TNC could be artificially disconnected.

Since the WA8DED code supports Level 2, and does the link testing thing, I thought it would be enough an improvement to give the new commands a try.

Ron Raikes, WA8DED, has a software development company, and apparently the equipment and knowledge to write code in assembly language, following the published AX.25 protocol and utilizing the TNC-1 hardware. He provided his code to amateurs, cost free. J, KBOQJ, wrote to Ron and obtained a disk containing the source code, the assembled object code (the stuff that goes in the EPROMS) and the documentation. After a period of transferring it from computer to computer he was finally able to get EPROMS programmed by Bob, AF5Z. He immediately began singing its praises but I remained skeptical until I gave it a try myself.

The TNC-1, as designed by TAPR, contained four 8K EPROMS that were chocked full of code to make them work. The WA8DED code takes two 2764 EPROMS (16 K total) with lots of room to spare. This frees up two sockets that were used by the TAPR EPROMS and opens the possibility of replacing them with 6264 RAM (random access memory) and thus increasing the buffer space in the TNC. In fact, the 'DED code uses the extra 8 K ram socket (U8) on the TNC-1 while the TAPR never did. (The TNC running TAPR code reports 8 K available but doesn't use it, unless you are reading and writing to it with the debugger.) J, KBOQJ, uses the two vacated sockets for RAM and says that the program reports the extra buffer space available but I am uncertain that it is really available because pin 26 of a 6264 is a chip select pin and needs 5 Volts which is not present on my sockets. This needs a bit of experimentation...

In browsing through Compuserve's Hamnet I had seen reference to a revised version 1.1 of Raike's code so I sought it out. I found it in the Hamnet library, in Intel Hex format. It was relatively simple to get it, strip out the data and get it into EPROMS so we could play with it. I took a closer look at the documentation and found that it was assembled so it would be simple to change some of the items that a user would like to customize, for example, the owner's call. I fixed up one with my call and reduced the maximum number of retrys to 5 (the normal maximum of 10 is ridiculous, if I can't make it in 5, I can't make it). What I had in mind was making up the EPROM so I could use it with the Model 43 TTY machine and have the TNC start after power application from the EPROM rather than the NOVRAM (almost non-volatile random access memory). I thought this would make the system more reliable in case of momentary power failure.

(By the way, the version 1.1 code is not so different from version 1.0 that anyone with the former should sweat it. It has some changes in the host mode, which the normal user would not use, handles timing through digipeaters a bit differently and will not transmit if the call sign field is blank.")

Within the first few minutes of playing with the code I set a time-out test to see if it would disconnect like I thought it should. I was disappointed when, after 5 or 6 minutes it was still hanging in there. I guess I had set it up to work AX.25 Level 1 protocol when I made the first connection because after changing both TNCs to Level 2, the DED operated TNC-1 timed out like it was supposed to. A few days later, to my disappointment, I discovered the TNC locked up by being connected to a TNC is a distant town. Drat! When I checked, I found that it was operating at Level 1. Apparently it was smart enough to switch levels when it was stimulated by a TNC running Level 1. Oh well, back to the drawing board.

The 'DED code provides headers containing a lot of information to the terminal while running in the monitor mode. To find out stuff like frame numbers with the TAPR code it is necessary to run a trace function. This results in an abundance of information but it is difficult to interpret. With the 'DED code, it is possible to selectively monitor information frames (regular stuff from a 'connected' station), unnumbered information frames (unprotocol stuff), supervisory frames (connects, disconnects, etc.), monitor while connected, monitor frames addressed to certain stations or from certain stations, and include or exclude certain stations. The latter is like the TAPR LCALL (lid list) that is used to exclude frames from stations that send beacons and other awful stuff (like my PBBS too!).

For a period, Heath Co. was sending, on request, copies of the WA8DED code to owners of the HD-4040. Raikes, the author, objected to Heath's distributing the code because his permission was not secured before making distribution. It is copyrighted and distribution has been free to amateurs but there must have been circumstances that aroused Raikes' ire to cause him to make the objection.

According to Gateway, the ARRL packet radio newsletter:

"Ron Raikes, WA8DED, also spoke to Gateway regarding the matter. According to Mr Raikes, owner of Software 2000 in Downey CA, a company that writes network operating systems, the code was meant to be distributed free of charge for "nonprofit, noncommercial, amateur use." Mr Raikes felt that the Heath venture did not fit the bill of a nonprofit organization even though Heath was not charging its customers for the software."

I guess codesmiths are sensitive about those kinds of things. I have read criticism of Raike's reaction, but from those who probably haven't the foggiest idea of what is required to develop software such as the TNC control program and the 'bread and butter' that effort represents.

Meanwhile, back on the TNC-2, I had new software toys to play with.

The most common TAPR TNC-2 software being used is version 1.1.2. It was relatively bug free but there were some problems that the casual user would not have been aware of. For example, FULLDUP, is used to run full duplex on the radio side of the TNC. We operate half duplex so there wouldn't have been many people that would have had a problem with that. There was a problem under certain conditions that caused the TNC to send an incorrect acknowledgment. There was an error in the time the TNC took to respond through multiple digipeaters.

More important change to the version 1.1.3 is the addition of a bunch of registers where information about the TNC's operation are stored. There are fourteen 16 bit wide counters that start out on initialization equal to zero. Some are error indicators that should never increment, like the one that counts how many times the device handling data from the terminal fails to handle the data in time. Others count things like number of frames digipeated by the TNC. My favorite is the RECDSABM counter that counts how many times the TNC saw connect requests addressed to it. If I leave monitor on all day and come in to find the buffer has 240 K characters in it, I can check RECDS and see if the number of connect requests have increased, meaning someone wants to talk to ME! I know that somewhere in that mess is possibly a message for me.

The whole list of fourteen counters can be displayed by using the "DISPLAY HEALTH" (DISP H) command. There is another, related change to the TNC-2 software called HEALLED. When it is turned on the connect and status LEDs will waffle as long as the TNC is operating properly. If it locks up from a software crash the LEDs should stop winking. I question the value of this because with operation since before first of the year, 24 hours a day, I only once had a software problem requiring a reset. I suppose it could happen if the power was interrupted for a short time or a power line transient zapped it but I run mine off of battery power. The only crash mine had was when the lightning strike hit earlier this spring. It was obvious something was wrong that time because the front panel LEDs were winking like Christmas tree lamps when they shouldn't have been doing anything but just setting there. Oh well, maybe someone will get a kick out of the LEDs winking on purpose.

A block mode has been made available with version 1.1.3. It only affects the way data is sent to the terminal and is intended for application where the data is to be handled by a computer, like a bulletin board. It will be of limited usefulness otherwise. It starts every block with a hex FF, some length information, a protocol identifier, and finally, the data. If RXB is turned on while running the thing from a terminal, or a computer acting as a terminal, it can cause some strange things to happen because some of the length information can be interpreted as control codes that blank the screen, reposition the cursor, etc. Not recommended.

The new software works in the TNC-2 copies (PK-80, TNC-200, MFJ-1270) and is available as a 27C256 EPROM from TAPR for $10. TAPR's Address is: P.O. Box 22888, Tucson, AZ 85734. You can send your old EPROM (27C256) to TAPR for reprogramming for $1.00 and return postage. I wouldn't imagine anyone would want to be off the air to do that. I didn't. Joe, K5JB

Direct Conversion Receiver On VHF

The July issue of rfdesign magazine contained an interesting article by a couple of employees of Siltronics Ltd. describing a direct conversion receiver design that can be used at 20 to 50 MHz or 136 to 174 MHz. Some of you may remember the popularity of direct conversion (detection) on HF. I built one and used it on camping trips to maintain 40 Meter schedules. The Heath HW-8 was one popular rig that used direct detection.

The principle is to amplify the signal at the received frequency and mix it with a local oscillator operating on the same frequency using a doubly balanced mixer. The resulting mixer products are the sum and difference frequencies, the sidebands, of the transmitted signal. The thing worked pretty well on HF because, though it was limited in sensitivity, atmospheric noise is usually quite high and greater sensitivity would be useless anyway. Well on VHF the story is difference and we can use all the sensitivity we can get. The described design looks pretty good. For either receiver model the sensitivity is rated as 0.2 uV, though the performance conditions are not stated.

The only rub is that it is designed for FSK (frequency shift keying) and is thus greatly simplified. Also, the post detection circuits are designed extract digital data from the modulation information.

From the article: "The incoming signal is directed into two channels where it is mixed in quadrature with the carrier frequency generated by a local oscillator. The mixer output signals are separated in phase by 90 degrees and are at a frequency equal to the deviation of the incoming signal. The signals in the two channels are lowpass filtered to provide channel selectivity, then fully limited in IF amplifiers such that the IF outputs can be regarded as digital waveforms. These are digitally demodulated by a phase detector that detects whether channel A leads or lags channel B to give an output in NRZ format. ...The lowpass filter configuration must be such that the filters pass the FSK frequency deviation of 4.5 kHz while attenuating adjacent (25 kHz) channel signals by about 70 dB."

As designed, the receiver has a theoretical maximum data reception rate of 9000 bits per second but in actual practice the practical limit is 4000 bits per second. It seems that typical amateur practice of pushing things a bit past their limits should let us achieve 4800 bps, right guys? In fact, by cutting the deviation to 2.5 kHz maybe we could do 9600 FSK.

The logical application for such a receiver would be packet radio but there is a rub. We are currently going the quick and dirty route. By sending out stuff by audio tones over FM voice channels we are using the maximum feasible data rate of 1200 bps and using a bandwidth of about 21 kHz to do it. (I know, Kantronics is now doing 2400 with phase modulation but if we are going to phase modulation why stop at 2400 bps? Let's get serious and honk it on with 9600.) The advantage of the way packet radio was done is that the most people can get on with the least trouble.

To use this receiver we would have to come up with a corresponding modulation scheme for the transmitters. With some it would be a snap. If there is direct FM with a varactor diode, the FSK could be tied to that point and we would be off and running. The NRZ (non-return to zero) nature of the data would be natural for the direct modem connectors of the TNCs.

The Siltronics SM450 receiver is constructed on a 3 in by 2 in circuit board and can be trimmed down to 2 x 4 inches. The magazine article states a price of approximately $40 in quantities of 1000. For more information I suppose one could write to Siltronics Ltd., 436 Hazeldean Road, Kanuta, Ontario, Canada K2E 1T9.

I don't think we could use a 1000 so this will just have to stay in the wishful thinking phase for the moment. There was a time I would have checked on a couple of samples for experimentation but, let's face it, I am getting lazy and getting in practice to operate 75 Meters, or something, HI

Joe, K5JB

THE ZANY NEWS FREQUENCY

By JOE, WA5ZNF

Hey, had you noticed any difference in the Collector & Emitter this month? Well it is an effort to keep costs down - the regular printer has raised his rates - so I looked around and got my son to print it. It will look different but should satisfy those of you who did not like it being (a) printed on newsprint, (b) it fades, (c) it was too big.

It has been reduced by 20 per cent in the size of the type but a survey of many readers revealed that it was easier to read, how about that?

Now if everyone (editors, that is) can submit their copy prepared 30 characters to the inch, that is the same as 3 inches, and by the way the same width as two columns of the Daily Oklahoman, and the type is the same size. We can still use the copy set 32 to the column, just paste around it.

Next months C&E will look better, I promise. This one was hurried out so EVERYONE would have a chance to PRE REGISTER for HAM HOLIDAY.

I am doing better every day and soon will be up to par.

Joe, WA5ZNF

help and support from the EARS members will be appreciated, so mark your calendar. This class will be a little different in that we will have an instructor assigned to a group of five students. This group will be available to meet one night during the week at a designated house for extra help. This allows close friendships to develop as well as a small group to help each other if problems occur. If any member is interested in becoming a mentor to a group of these students please let me know if you have not already done so. Members talk up the classes, especially, to younger people. I would like to see us increase our class size and help further our hobby.

To help the HF portion of our hobby, next spring, we would like to have some sessions on working contests and earning awards sponsored by the ARRL. In the meantime, if you are interested in earning the "Worked All States" (WAS) let me know and we will set up some goals and work as a team. This could be a lot of fun, plus get you back on CW.

There will be a lot of room on the club table at Ham Holiday for your items. Just let Ken, N5DBM know how much room you will need. Also, time slots are going fast for working the registration desk. Call Bob, N5BUJ, and get the time you want.

73s BOB KA0CVK

LOST: White hound dog with brown head on north end.

FOR SALE: A full blooded cow who gives three gallons of milk, 2 tons of hay and lots of chickens.

WANTED: A mahogany living room table by a lady with Hepplewhite legs.

Minnesota MARS

1986 HAM HOLIDAY NON-TECHNICAL PROGRAMS

Saturday - BLUE ROOM

9:30 Plants are no more trouble than kids and pets.
10:30 Color Analysis / Makeup
11:30 How to make great Hors d'oeuvres
12:30 Lunch Break
1:30 Bingo
3:30 How to choose the proper wine (Wine & Cheese party to follow)

Sunday - THEATER

11:30 Let the games begin!

B & M ELECTRONICS
THE HAMS BEST FRIEND
OKLA CITY OK

The following is a partial list of items carried in stock:

1. FUSES: For those who have trouble blowing fuses we have 30 amp marked 3 amp.

2. ANTENNA TOW HOLES: We have these in assorted sizes and depths. Why dig when you can buy ready made holes.

NOTICE: We have improved the design on some of these by threading them. Now if you have to move you can unscrew them and take them along. Millions of small holes have been sold to golf courses.

3. ANTENNA GREASE: One application is all that is needed. Standing waves are lucky if they can hang on, even lying down.

4. WA5JGU LOZENGES: A fine product that makes SSB sound like AM. These lozenges provide a golden voice compared to the silver voice of William Jennings Bryan Lozenges sold by our competitors.

5. SMOKE SIGNAL KIT: This kit will modify any transceiver so it will send smoke signals. W5HXL used one of these on last Field Day loading his rig on 40 meters into a 2 meter antenna.

Salem

TOWERING OVER THE COMPETITION

When I first decided to put a tower in the air at my new QTH, I first wondered about how high to make it. I have been up several towers including the big TV towers in OKC. I clearly was not going to support anything like that in my backyard, but anything over 30 foot would probably require some basic safety equipment. First, there was a belt. That was not really difficult since there are several people around town. Louis KD5WA came up with a surplus belt when he bought a new one. I don't know why he bought a new one since this old leather belt still had a lot of life in it. Louis used to tease me about my original plan to construct a radio system off a 20 foot television mast. I am sure that he would not have surplused his old belt to me if he thought that I was going to use the mast as the sole support of my antenna system. But when the tower kept climbing up and up and eventually settled out at 60 foot to the HF Beam and 70 foot to the two meter and 450 Mhz antennas, I guess Louis felt that his belt would finally have a proper home.

I used the belt quite a bit in the early stages of the tower construction. It still had a lot of strength and worked great. While trying to work the bugs out of the system, it was nothing to grab the belt and scamper up the tower and tie myself off while working on the beam or inverted V antenna. I can remember climbing the tower several times at night, including one night when it was cloudy and rainy with just a little mist in the air. One of the runs of coax was placed on the tower at night. The rotor cable was strung at night. It probably was not a good idea but I did have a ground crew for a couple of those sorties, but once or twice, I was on my own. I have also been up the tower in a wind. The antenna is basically unbalanced. That is because unless the antenna is positioned just right in the wind, there will almost always be unequal square footage of the antenna on either side of the mast. As a result, the antenna pushes and rotates back and forth and constantly rocks. The higher the wind, the harder it rocks. It is just like a giant spring twisting one way and then back again. I have read some articles that say that the greatest problem that towers have is [illegible]

ability of the tower to withstand this constant twisting moment in the wind. This is especially true of antennas that carry heavy Yagi antennas like mine, but can be also true for towers with sidemounted antennas. A DB224 has a fairly large wind surface area (about 3.15 square feet). This antenna is approximately 20 foot long and is generally sidemounted on towers about 2 to 8 foot away. I have a DB410 UHF colinear type which has about 3.3 square feet flat plate equivalent area which I intend to side mount on my tower about two foot or so. This will add an additional twisting torque in the wind and I expect the antenna to wind the tower up. I was on the tower one time in a 15 mph wind and I was amazed how much it twisted. It seemed like a good idea to finish what I was doing and go down and wait for the wind to die down.

Rohn makes a set of torsion bars to use to eliminate this problem, but they don't really recommend their use unless you get above 50 feet or so. Regular Rohn 25G is very strong.

For some, tower climbing is not a spectator sport. Somebody, after all, has to do it. So that is why equipment is very important. You just can't climb a tower without a belt or some other type of restraint. And height really doesn't make any difference. Anything above 20 feet has the potential for serious injury in a fall. I read a story in one of the mobile magazines about some guy who survived about a 50 foot fall, but the results were very serious. He was using a leather belt and the point of the article was that everybody should throw away their leather belts. I thought about this when looking at the leather belt I got from Louis. But, it seems to me that leather is OK if you take a little extra time to inspect it before each climb and test it at low altitudes. I always drop on the belt at the beginning of a climb and when I come up to altitude. If I have a loose hand, I generally have it wrapped around a part of the tower. You can't be too careful.

Safety on the tower is an attitude. You have to want to be safe to act safe. But equipment is important. And that is why I read a recent article in Communications Magazine about the OSHA standards for tower climbing equipment. The Occupational Safety and Health Act of 1970 covers everybody in the commercial business of climbing towers. It also places primarily responsibility on the [illegible]

responsible not only for his employees, but also safety of subcontractors.

EQUIPMENT AND SAFETY

What are the requirements for tower safety equipment? Well, a little common sense is the first requirement. Equipment should be used only for the task for which it is designed. And that includes following the manufacturer's recommendations and instructions. Next, all persons who are going to use particular items of equipment should be carefully and adequately trained in its use. This means no make do.

For those who have a penchant for perusing the Code of Federal Regulations, OSHA requirements are found under Title 29 of the CFR, Chapter XVII, parts 1910 and 1926. (The FCC rules and regulations are found in Title 47 of the Code of Federal Regulations. These can be found in any law library and many general libraries. The CFR codifies Rules that are published in the Federal Register and the entire set is completely published during the course of a year).

Part 1910.67(c)(2)(i and ii) specifically apply to telecommunications personal climbing equipment. Parts 1926.552 and 1926.556 and 1926.951 deal specifically with the care and use of personal climbing equipment.

Does your belt match up? Well, current OSHA requirements under 1926.951(b)(1) requires body belts with straps and lanyards to be worn to protect persons working at elevated locations on poles, towers or other structures except where such use creates a greater hazard to the safety of the employees, in which case other safeguards shall be employed. Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds. In areas where the lifeline may be subject to cutting or abrasion, the lifeline shall be a minimum of 5/8 inch wire core manila rope. For all other lifeline applications, a minimum of 3/4 inch manila or equivalent, [illegible]

strength of 5,400 pounds, shall be used. Section 1926.104.

Safety belt lanyards shall be a minimum of 1/2 inch nylon, or equivalant, with a maximum length to provide for a fall of no greater than six feet. The rope shall have a nominal breaking strength of 5,400 pounds. All safety belt and lanyard hardware shall be drop forged or pressed steel, cadmium plated. The surface shall be smooth and free of sharp edges. All safety belt and lanyard hardware, excepting rivets, shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking or taking a permanent deformation.

Climbing restraints are also classified under the standards of the American National Standards Institute (ANSI). These requirements are found in Part A10.14-1975. There are four categories.

Class I includes body belts which are used to restrain a person in hazardous work position, and to reduce the probability of falls. When subjected to a fall, these belts and their associated hardware must produce a stopping force of not more than 10 times gravity.

Class II chest harnesses are used where there are only limited fall hazards, no vertical free falls, and for retrieval purposes, such as removal of a person from a tank or bin. They are not to be used for arresting a fall and are not subject to impact requirements.

Class III body harnesses are used to arrest the most severe free falls. When subjected to a fall, these belts and their associated hardware must produce a stopping force of not more than 35 times gravity.

Class IV suspension belts or independent work supports are used to suspend or support the worker. Like Class II harnesses, they are not to be used for arresting falls and are not subject to impact requirements.

Few amateur towers have fixed ladders for climbing. However, many commercial towers, especially TV towers do and when a fixed ladder exceeds 20 feet in height, they are required to have a means of climbing protection. This requirement is normally met by installing a ladder safety climbing system. This normally is a 3/8 inch galvanized steel cable running with the ladder and anchored at the top and bottom of the ladder run. The climber hooks a safety harness to a gripping mechanism that runs on the cable. If the worker slips or [illegible] go of a lever on the carrier, it immediately clamps onto the cable with enough force to suspend the worker by his safety harness. This is prescribed by OSHA standard 1910.27 which requires the system to be capable of withstanding the force of a 500 pound weight dropped 18 inches. The current ANSI standard allows a link of 9 inches between the safety climb clamping mechanism and the body belt.

How can you be safe? Well, it is a matter of a state of mind, but a few pointers are in order. OSHA Section 1926.951(b)(3) requires an employer to have all safety equipment inspected by a competent person before each use. You should do the same. Don't just take the belt out of the closet and strap it on. Look it over. Check for danger points such as worn, cracked or deformed hardware, pulled stitching, strained rivets, etc. Inspect the general overall condition of the safety belt. Have someone else look the belt over for you just to make sure that you have not missed something.

Store the belt in a hanging position where it is not twisted or subject to unusual straps or stress points. It might also be a good idea to keep the belt clean and dry and storage should be in a cool area. Some companies destroy a belt that has been used for a fall arrest to prevent further use. This is done because there is no way to assess what internal damage might have been done. Lifelines often break from the inside out. Don't climb without a belt. Just don't do it. I also use an interlocking method of climbing that keeps usually one arm inside the tower so that if I lose a grip on the inside portion of the tower, I generally have at least a chance to grab another member. I also don't use gloves when climbing. If I need them, I take them up the tower and put them on after belted off safely to the tower.

Micheal Salem N5MS

INTERMOD ALLEY COOKBOOK

Several months ago while doing some research on an intermod problem, I saw an ad in MRT magazine for a book on intermod. It was just $8.00 and available from Wiesner Books, 5951 South Middlefield Road, Littleton, Colorado 80123. The book was a collection of articles from MRT magazine and written by Bill Lieske of the EMR Corporation. I had seen the book at Dayton at some of the vendors, but neglected to pick up a copy. So, I decided to order it. It is a pretty good book. For anyone wanting to delve into the area, it is a pretty good thought book. It also offers some practical solutions for intermod and stresses understanding the particular problem and then sets out the information or knowledge needed to solve it. The $8.00 price tag includes postage and handling. Not a bad deal.

Micheal Salem N5MS

YOU WONDER WHERE THE POWER WENT . . .

I had a problem with the duplexer on the Kahuna (146.88/28 Mhz to those of you unfamiliar with the repeater). This was some time ago. The repeater seemed a little bit sensitive to desense and I thought that the problem might be detuning of the duplexer. After all, it has been up in the penthouse elevator room for some time and the temperature sensor of the RC-850 controller has indicated temperatures of 124 degrees or so every now and then. The problem turned out to be the coax cable to the duplexer. A loose connection was creating a nonlinear connection that was just perfect for garbaging the output of the repeater. I replaced the cables and the the system came back up to snuff.

A article I saw in MRT magazine talked about a desense problem in an 800 Mhz system that could not be found even though it was sent back to the factory. Finally, after spending a considerable chunk of money on new duplexers and other solutions that didn't work, the author changed the coaxial connectors to Teflon silver plated connectors. Voila!! The problem was solved. With this in mind, I scouted around the Dayton fleamarket and bought 15 silver plated teflon connectors for over a dollar apiece. This theory was also reinforced when I ran across a Motorola Engineering Bulletin which said that it was important to use teflon UHF coax connectors on 800 Mhz systems. The teflon has lower loss, the impedence is more stable at higher temperatures, is effected less by temperature extremes and is a non-moisture absorbing material.

Micheal Salem N5MS

EDMOND AMATEUR RADIO SOCIETY

This month of June and the first week of July are finally over, as we pause a moment to recollect (not fall asleep from exhaustion), I would like to thank all who have helped do so many things. It makes me feel proud to be a member of a club that eventhough we seem to have been running for three weeks in five directions at once, things can still come together and bring a sense of pride to our club.

First, let me clear up one point, I left out last month, the EARS information net meets on Monday night. I remembered to say a lot about it last month, 8:00 p.m., 147.135+ and all hams are invited, but forgot to say what day. So MONDAY night please check in on the EARS Information Net. Anyone in the area is invited but a special invitation goes out to the LADIES and TEENAGERS. Although we have not had a female net control operator, we have had three teenagers. They have been net control in June and will take turns in the coming months. We would like to start nets for each but we need to know you are out there to justify the time in putting them all together. A net may sound smooth but behind the scenes there is a lot of work involved to make it that way. As a challenge, I would like to hear from some of the "OLD TIMERS" in amateur radio to check in. I think you will be proud of the way the kids handle a fully operational net.

Public Service has been given new meaning this month. In addition to the tornado in May, there were many special events in the Metro area. Imagine, Sooner State Games and Field Day in one weekend. The next weekend is the 4th. of July parade and fireworks. Not much on paper, but let us put it another way, 40 hours!! Here is a recap of what the club has been doing:

June 27 - 6:00p.m., several members helped in Opening Ceremonies of the Sooner State Games.

June 28 - 8:00 to 5:00 EARS members present at Sooner State Games at several locations in the Metro area providing communications and health and welfare messages. A total of 68 hours were donated.

11:00 Field Day station is set up by Lee Vaughn,KA5WIS, Don Kelly, KA5UOS, John Thomason, WB5BYT, Larry Traub, N5IXV, Frank Tassone,and Bob Thomason, KA0CVK. At start, our numbers were small but by 6:30 p.m. 20 members showed up for the club picnic and stayed until around 2:00 a.m. We had CW, Packet, and SSB going at all times. We scored over 2000 points, not bad considering band conditions (20 meters) and the scattering of the flock around town.

July 4 - At 6:00 the parade workers began to gather to help get politicians, buffalo, horses, floats and bicycle riders lined up for the 10:00 start of the parade.

EARS had a float in the parade this year. Thanks to Lee Vaughn,KA5WIS and Edith Vaughn, KA5YPX, for taking the ball and making it all look so easy. Thanks also to some wives who helped to decorate the float, Gloria, wife, of Tommie Guinn and Jana, wife of John Thomason. Thanks especially to K5ERY, Allen Watson for operating the radio on the float, and Jamie Guinn,(Statue of Liberty). Allen made a lot of contacts on 40 meters . He talked to St. Louis, Mo., Tucson, AZ., and several Texas stations while moving in the parade.

7:00p.m. - We gathered for the fireworks display, watch for heat exhaustion victims, help parachuters with their chutes, crowd control on the football field and assist with starting the fireworks at 10:00 p.m. Our lost parent patrol was intact until 11:00.

That's all we did in our last two weekends, if you don't collapse from just reading it all, I'll be surprised.

KA5VEK agreed to give us parachute collapsing practice by pushing KA0CVK out of a plane if someone wants to catch him..She might even let him wear a parachute. Seriously, we were asked by a member of the parachute ground crew to assist because of high wind speed and vortex in Wantland Stadium, fortunately, all of the parachuters were able to collapse their chutes, but we were there if needed.

John Levis, K2JDV, gave the signal to start the fireworks this year. The Fourth of July Festival Committee did a real good job with the fireworks. After the smoke settled, KA0CVK, hosted a watermelon feed. Hope we did not ruin the paint job, Bob?

In our spare time, we came up with a new logo for our club. If you have not seen it, let us know and we will provide you an opportunity to see one. Thanks to Mary, KA5WHI, and Harold, WB5ZKX, for all of their help. They found us a patch company that could provide them within 10 days so they would be here before the 4th. of July.

As Special Projects Director (a catch-all, if I ever heard one), I have heard of several projects from some members:

1. Special events for Novices in November.
2. Antenna Party
3. Santa Claus Project
4. A Club Scrapbook
5. And many more ideas still in the planning stages

73s
Tommie Guinn KA5WAV
Special Projects Director

Secretary's Corner for EARS

The next five months are going to be very busy. The following activities are already slated:

1.August 1,2,&3 - Ham Holiday
22 - Dinner Meeting
24 - Free Seminar
2. September 21 - Business Mtg.
28 - Novice Class
Gen. Class
3. October 17 - Dinner Meeting
picnic
4. November 16 - Business Mtg.

5. December - Santa Claus Project
16 - Dinner Mtg.

More News.....

EARS will sponsor a free seminar for all people interested in ham radio and what it takes to get a license. This will be August 24, 1986; 2:00p.m. at St. John's Catholic Church located at 9th. and Littler in Edmond. The public is invited.

Novice through General classes will begin Sunday, September 28, 1986 2:00 to 4:00 p.m. at St. John's Catholic Church. If anyone is interested please give one of the officers a call. All

TECHNICAL FACTS OF LIFE

Although vacuum tubes and transistors both can be made to amplify RF power, there are some fundamental differences in how this is accomplished. We are all familiar with vacuum tube principles, but not with those of transistors. A better understanding of what we can expect under various operating conditions will aid in recognizing correct or incorrect performance.

Broadband vs Resonant Tanks — Almost all tube circuits are resonant tanks in the plate circuit. In class AB operation, these two approaches act similarly without drive being applied. The idle current is relatively low and within the device dissipation rating, even with load impedance variations from open to short circuit.

However, with drive applied, the two act very differently. In the case of tubes, the dissipation within the tube depends on both the tuning of the tank and the load applied. If the tank is resonated and the load is very light, the internal power dissipated is quite small as indicated by the null which reduces the place current almost to the level with no drive. Out of resonance, the plate current, and hence dissipation, increases rapidly and may damage the tube from overheating. In resonance, as the load is increased, the null becomes more shallow at a higher plate current as a result of the power being delivered to the load. As the tank is tuned to resonance, the load impedance which is usually on the order of 50 ohms is transformed to a relatively high impedance of several thousand ohms to match the plate circuit impedance. Small load reactive components — either capacitive or inductive — can usually be balanced out in the tank resonating function.

With transistors, drive applied and no load, there is no resonant high impedance to limit the collector current, and so power is poured into the circuit (much as the out-of-resonance tank condition). Since there is no load power, all has to be dissipated in the transistor. So even with no load, the power supply circuit breaker may trip. The broad-band transformer system used with transistors transforms the 50 ohm load impedance not higher, but much lower (in the order of 4 or 5 ohms) to match the transistor output impedance. Since this transformation is fixed in design, any reactive component in the load impedance is applied in a transformed way to the collector circuit. Certain reactances at this point, especially inductive, give rise to parasitic oscillation. To correct for this, the antenna impedance should be changed to remove this reactance, or a matching network should be inserted between antenna and transceiver. It is important to remember that any antenna changes impedance with frequency, so that one that resonates well at one end of the band may well cause oscillations to trip the circuit breaker on the other end. If entire band operation is desired, especially on the lower bands, the adjustable matching network would be the better choice, rather than to try to make the antenna behave over the entire band on a cut-and-try basis.

A final point to bring out regarding broadband vs tank systems is that there is a limit to the amount of current you can draw from an emitting filament, and this saturation current will limit the amount of power drawn from the supply. In the case of transistors, where the collector internal impedance is only a fraction of an ohm, extremely high currents can be demanded of the power supply, especially with mismatched loads well below 50 ohms.

Karl White, K4DQ

The above was extracted from the TEN-TEC Owners Manual.

SI SEZ: "To get stoned drink wet cement."

SI SEZ: "A closed mouth gathers no feet."

ED SED: "I believe in girth control."

ED SED: "Firemen make house calls."

ED SED: "Be reasonable, do it my way."

SI SEZ: "Use your head, little things count."

THE BIG SIGNAL

OKLAHOMA CITY AUTOPATCH ASSOCIATION, INC.

HAM HOLIDAY GREETINGS: To all "out-of-towners," welcome to Oklahoma City and Ham Holiday. Just for you, OCAPA has set up a SPECIAL AUTOPATCH OPEN TO ALL during Ham Holiday Tune your two-meter rig to 146.82 with the offset down 600 kHz. To make a phone call to any phone in the Metro dialing area, press the (*) and the seven digit phone number. Don't wait for a dial tone. Dial the "*" and all seven digits of the phone number in one 8-digit string. You will have about three minutes to complete your call before patch time-out. When finished, give your call and press the pound (#) button. This SPECIAL AUTOPATCH will be in operation from about 6 pm Friday, August 1 to about 6 pm Sunday, August 3. If you need assistance in dialing or if any emergency should arise in which an ememrgecy service is needed, just ask for help on 146.82.

ABOUT OUR CLUB: Oklahoma City Autopatch Association (OCAPA) currently has a membership of about 150 licensed radio amateurs. As stated in the club's by-laws, the purpose of OCAPA is to promote interest in the field of communications, electronics and the Amateur Radio Service.

Our club is also responsible for operation of the Central Oklahoma Severe Storms Warning Net. We host a tornado spotter's training session each February.

OCAPA operates and maintains four repeaters in Oklahoma City: 52.525, 146.82, 147.21 and 444.3. The two-meter and UHF repeaters are all situated on KWTV tower in northern Oklahoma City. Our six meter repeater operates split-site at NW 50 and May and at NW Highway and Grand Blvd.

These repeaters are open to use by all properly licensed hams. 444.3 is "PL" accessed using 141.3 (4A). Certain codes for operation of auto-patches, autodialer and mail box features are reserved for use by members only.

Membership in our club is open to any licensed radio amateur. Dues are $25 per year, which pays for repeater maintenance, phone lines, insurance, C&E subscriptions, meeting room, etc. Our club meets each month on the third Tuesday at 7:30pm. Listen for details on 146.82.

NOMINATIONS: Our Nominating Committee, headed by Joe, WA5ZNQ reports that they have selected a slate of condidates for 1987.

The Nominees are:

President: Charles, N5FMU
Vice president: Dave, N5GQY
Secretary: David, KF5EB
Treasurer: Art, KF5DK

This is a fine selection of candidates. Our thanks to Joe, Sue, KE5QN and Art, KF5DK for their help in these selections

Our thanks to the candidates for agreeing to the nominations.

Remember, should you wish to nominate a candidate of your choice or be nominated yourself, the August meeting is the place to do so.

ELECTIONS: The elections for the above mentioned offices will take place at our August meeting, Tuesday, August 19, at 7:30pm. Listen to 146.82 for an announcement of the meeting place.

73 de KB5M

NAIL POLISH IN THE SHACK?

Sounds silly - but listen:

1. I use red nail polish to mark dials and points on cabinets for rotary switches.
2. Red for the "off" button or switch on equipment so the YF and harmonics will know what to push if I leave something on when I am out.
3. I use red and white (other colors are available) to identify mating male and female connectors,
4. If I have a screw or nut that tends to work loose with vibration, a dab of polish under it will hold it solid.
5. Don't overlook Nylon cord and rope, a little polish on the cut end stops the raveling.
6. Clear nail polish is ideal for waterproofing labels on equipment and electrical connections that tend to corrode.

ARA Bulletin

UNWANTED ADS

FOR SALE: Large crystal vase by lady, slightly cracked.

SITUATION WANTED: A young woman wants washing and cleaning daily.

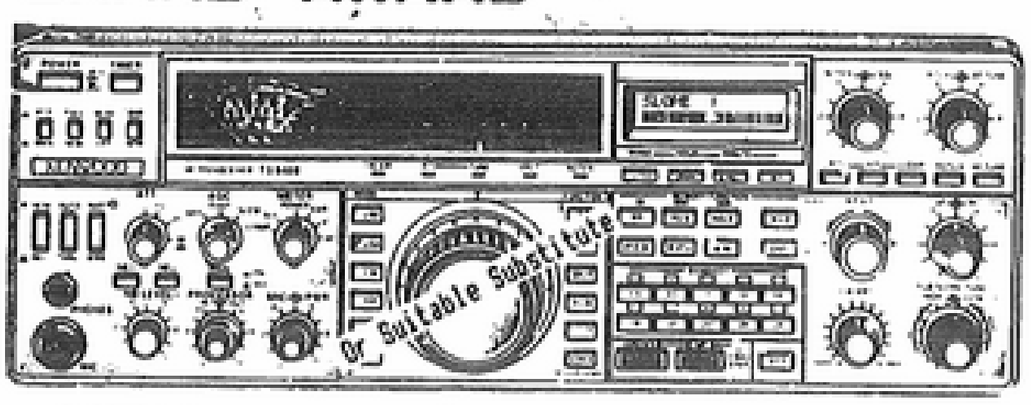
EDMOND AMATEUR RADIO SOCIETY will sponsor a free seminar for all people interested in ham radio and what it atkes to get a license. This will be August 24, 1986, 2:00pm at St. John's Catholic Church located at 9th.

CENTRAL OKLAHOMA RADIO AMATEURS

proudly invite everyone to attend our *bigger* and *better*

HAM HOLIDAY/ARRL WEST GULF CONVENTION

GRAND AWARD



KENWOOD TS-940S ALL MODE TRANSCEIVER

PRE-REG AWARD

ICOM IC-735 COMPACT TRANSCEIVER

AUGUST 1, 2, 3 LINCOLN PLAZA OKLAHOMA CITY

INFORMATION & RULES FOR HAM HOLIDAY

FACILITIES: HAM HOLIDAY/ARRL WEST GULF CONVENTION will be held in the Convention Center of Lincoln Plaza, 4445 N Lincoln Blvd, Oklahoma City OK. Commercial exhibits may be set up Friday night. Security has been arranged.

PROGRAMS: Something to interest everyone. There will be the usual displays, forums and seminars, from Beginning to Extra. There will be programs on DX, Antennas, Satellites, FM, Computers, Packet Radio and many others. Special groups will hold meetings: ARRL, Night Owls, Oklahoma Repeater Society, SHARK, MARS and CORA to name a few. There will be many programs for ladies - they will be kept busy

FLEA MARKET: (Non Commercial Only). Every Pre-Registrant may rent ONE table for $7.00 (To cover our cost). Additional tables are available on the Pre-Registration form. (Tables MAY be available at the door for $10). The 30,000 sq ft area is indoors and Air Conditioned, with easy access doors for setting up. No displays or "tailgating" will be allowed in the parking lot.
7:00 Open to registrants for setup. Back doors.
9:00 Open to all REGISTERED people.
4:00 CLOSE. Start to clear tables.
5:00 Tables will be removed. People who want tables together should order them through one person. This includes clubs or individuals. Submit Name & Call Sign of persons sharing tables to N5FMU. Only exhibitors will be allowed prior to 9:00am. You may set up any time after 7:00. No flammable liquids, explosives or weapons allowed.

PARKING: There is plenty of FREE parking surrounding the convention site. Several eating places are nearby. Free parking for SELF CONTAINED RVs.

HOSPITALITY ROOM: It will be there, but, the Lincoln Plaza Staff will handle the coffee and eats.

AWARD POLICY: The winner and/or his ticket MUST be present to claim any award EXCEPT the Pre-Registration award. You may sign your ticket for someone else to hold for you. Unclaimed Pre-Registrations will not be deposited for the main drawing - only for the Pre-Registration drawing.

TRANSMITTER RESTRICTION: In order for any ticket holder to be eligible to win a AMATEUR TRANSMITTER he/she must hold a valid amateur license, or there must be a licensed ham in the family.

PRE-REGISTRATION: $10.00 with attached form. All envelopes must be postmarked not later than July 23, 1986 to be eligible for the Pre-Registration award. Packet with necessary tickets will be held at the door. To AVOID REGISTRATION LINE: Include 50c, before July 10, and registration(s) will be mailed to you between 7/16/86 and 7/23/86. No limiton on number of tickets you may purchase. No refunds. Winner need not be present, for this award only.

ADMISSION: $10.00 Pre-Registered. $12.00 at the door. Registration tickets must be worn in plain view for entry into ANY area, including exhibit halls, program areas, flea market, commercial exhibits except Smorgasboard, Early Bird Breakfast or Night Owl Net.

SMORGASBOARD & OCMA BREAKFAST: Smorgasboard will be held at the Heritage House, on Northwest Highway, west of Portland, at 7:00 on Saturday. The OCMA Breakfast will be held at the Lincoln Plaza at 8:00 on Sunday.

LAST NAME _____ FIRST _____

ADDRESS _____ CALL _____

CITY _____ STATE ____ ZIP _____ @ $10.00 = $10.00

(Additional Registrants. Same address. Eligible for everything.)

NAME _____ CALL _____ @ $10.00 = _____
NAME _____ CALL _____ @ $10.00 = _____
NAME _____ CALL _____ @ $10.00 = _____

RESERVE---------FLEA MARKET TABLES (SATURDAY ONLY) @ $7.00 = _____

RESERVE---------ADULT SMORGASBOARD TICKETS @ $8.00 = _____

RESERVE---------CHILDS SMORGASBOARD TICKETS (6 TO 12) @ $5.00 = _____

RESERVE---------OCMA BREAKFAST TICKETS (AT LINCOLN PLAZA) @ $7.25 = _____

ARE YOU A C O R A MEMBER (YES) (NO)

SEND PRE-REGISTRATION WITH CHECK/MONEY ORDER TO: TOTAL AMOUNT ENCLOSED = _____

HAM HOLIDAY P.O. BOX 60084 OKLA CITY OK 73146

MUST BE POSTMARKED BEFORE JULY 23. PLEASE! NO REFUNDS. AVOID REGISTRATION LINE! INCLUDE 50c BEFORE JULY 10.

CHECK THIS BOX ( ) AND REGISTRATION(S) WILL BE MAILED TO YOU BETWEEN 7/16/86 AND 7/23/86.

Will you be taking an FCC Examanation YES( )

Indicate CLASS OF EXAM:

YOU MUST ENCLOSE:

Check for $4.25 Exam Fee
Form 610 (Completed)
Xerox of current license (if any)
BRING WITH YOU ON TEST DAY
Pen or Pencil
Calculator (If desired)
Drivers License (Or other suitable ID for minors)
ORIGINAL of your current license (You get it back)

FRIDAY NIGHT at Lincoln Plaza
AUGUST 1 7:00pm

Please send to:

FCC EXAMS
DON KELLEY, KA5UOS
703 W 8th St
Edmond OK 73034

Use a separate envelope-
Separate check for Exam.

Q. R. Zedd

BADENOV, NATASHA COME TO CALL

Boris Badenov, ace Russian DXer and holder of the coveted five-band Twinkie-eating record, was in town last month to check up on the doings of the world's greatest DXer, Q. R. Zedd.

In the process, Badenov hurled a frightening threat at our hero.

Zedd, A5A, met Badenov in downtown Oklahoma City, not far from the wooden cows and dirigible hangar. Zedd was accompanied by his young, blonde, nubile bride, Tondelayo Schwartz, and Badenov's portable hf equipment was lugged by Natasha Bullwinkle, his QSL secretary from Box 88.

Zedd met Badenov in the Russian's hotel suite. It was a great scene! There was Badenov, in his Twinkie-stained brown army uniform, with the high black boots and the rows of DX achievement medals (not to mention his latest award for bravery, won by flying over Chernobyl at an altitude of less than 90,000 feet). Discarded Twinkie wrappers, the wreckage of dozens of Big Macs, and about 40 pounds of Coors empties surrounded him on the floor, along with the adoring Natasha, reclining langourously near the window in her customary outfit of black leather, with her necklace of bronzed QSL cards and high black spike boots, the ones with the straps that load up on 40 meters.

And here came the great man himself, our own Zedd, clomping in with his DXCC total badges flashing red, white and blue on the brim of his big white Stetson, his yellow shirt stuffed neatly inside the confines of his Gene Autry jeans, and his 940, stuck to his chest with velcro tape, spitting highspeed CW. Tondelayo was close behind, carrying his logbook and comb, and looking sweet in a pale blue sundress cut at midthigh.

"Ah!" Badenov yelled, not bothering to get up. "Is my good friend from this filthy imperialist country, Zipp -- Zapp -- what is it? Zowie?"

"The name is Zedd, boy," Zedd told him quietly. "Any time you want to remember, just look at the name on top of yours in the DXCC listings."

"Darling," Natasha hissed to Badenov. "You say word, I stick him with my knife!"

Tondelayo smiled sweetly. "I wouldn't, sweetheart, if I was you. I might tear your hair out, and you'd look real funny baldheaded, with all the wrinkles from your latest facelift showin' on top."

"Dirty little capitalist oink!" Natasha screamed. "You say one more word of me, I will take out my knife and cut off your PL259s!"

"My, my," Tondelayo cooed. "Does your nose always light up like that when you're mad, or have you been operating in Kiev lately?"

Natasha leaped to her feet, scattering beer cans and plastic containers. Zedd manfully stepped in front of Tondelayo, but Badenov saved the day by whipping out a grocery list and telling Natasha to head out promptly for the nearest 7-11. Natasha slunk out and Todelayo giggled.

"Well, Zing," Badenov rumbled after Natasha had vanished, "have you worked any rare ones lately? Is leader of evil western-bloc capitalist swine amateur radio community working any DX?"

"Well, Badzingham," Zedd drawled, "I guess I've worked a few, uh-haw. Since I activated the lost continent of Atlantis on all bands, all modes, early this year, I haven't been real active, though. I like to leave some room in there someplace in the spectrum for you beginners."

The Soviet star was so irritated that he swallowed a fliptop opener. The resulting coughing fit was severe; one row of his medals got rearranged and his miniature scanning rig fell out of his left ear socket. Tondelayo applied mouth-to-mouth resuscitation through two pillowcases and Zedd's bandana, however, and soon all was well again.

"You need to slow down on them beer, son," Zedd said with obviously sincere concern. "You're not as young as you once was, and all that radiation --"

"Zapp," Badenov choked, fuming, when he again could breathe, "my visit here is brief, only to let few peasants here see my wonderful person, offer rights to my great life story to editor of lowly, propaganda-filled, imperialist lackey Collector & Emitter magazine. But when I return great mother Russia, you will soon see once and for all who is greatest DXer in universe, me!"

Zedd tucked a little in between his cheek and gum and looked thoughtful. "What have you got cooking over there, Boris? Some new low-lifer trick to try to unseat me as the greatest?"

"Ha!" Badenov boomed. "Is twilight of Zedd in DX world! Wait and see!"

It was a sobering moment, unless you were Badenov himself and much too far gone. What he had in mind, and what the future might hold, only time would tell....

--- KC5R

GREAT PLAINS A.R.C.

W5HGH Repeater 146. 13/73

FIELD DAY 86

The entire month of June is a busy time in this area involving harvest, plowing, bible school, little league ball games and vacations to name a few of the activities. These reasons, plus some unexpected illness among club members coming about during this time, made us feel very fortunate that any interest exhisted in Field Day this year. Our activities were held in one of the picnic shelters in Crystal Beach Park in Woodward. This was a highly visible area and fortunately provided a shade and lots of air flow which was needed with the almost calm conditions that prevailed.

Freida, N5EOX, kept count and came up with twenty hams participating in one way or another. A great hamburger fry was enjoyed on Saturday evening. Ross, WB5MZZ, is again trying to decipher scribbles and scratches in order to determine, with the aid of his trusty computer, how many valid contacts were made. Now it is apparent why his eyes look red and bloodshot for the first two weeks of July. We thought for a long time his condition might be due to allergies. At any rate, Field Day was a success and all who attended seemed to have a good time.

MISSING

As you may have noticed, a part of this article entitled "Club Profile" has been missing for several issues due to our inability to interview likely candidates. After lengthy discussion, we felt Field Day would be a great time to get this accomplished. Guess what? We completely forgot! Evidentally there were too many other things going on. Maybe next month!!!

SECTION MANAGER = ELECTION TIME

The official ARRL Oklahoma Section Manager ballots are in

(CONTINUED NEXT PAGE)

HAM HOLIDAY

I must say that the Ham Holiday programs are coming into shape --- There was a time when those of us at CORA thought there was not going to be any programs. You say, "You got to be kidding" ---No it's just that no one wanted to be responsible for programs. But all that has changed so ya'll come on out to Ham Holiday for there's a lot to bend your ears.

For you that have a curiosity, and want to be more than satisfied, about all the buzzing of the bees, come to PACKET by our own Joe Buswell, K5JB.

At this writing, our big bird---Oscar 10 has developed a glitch in the IHU but it's in good hands and besides there is going to be more and better birds in space in the future so come tune into the oscars. There will be a two hour presentation by Oscar Expert Al Brenckerhoff, WB5PMR, of Louisville TX.

The rest of the programs are as follows:

SATELLITE DESCRAMBLING by Bob Pace, WA5CJG.

PHOTOGRAPHY a good two hours by Central State University. He is the one who does the instruction and demonstration for Pipkin Camera Stores.

YOUTH AND AMATEUR RADIO. With all the good inhancements to the Novice privilidges, we should be able to get new blood into our veins and keep it!! What would be more appropriate than a session by Melvin Miller, K5KXL, of Shawnee OK? Everyone talk this up and spread the word to the youth about us and let's make this the most attended program of all.

FAST SCAN ATV. A session with live demonstration of fast scan ATV by O. J. Watkins, WB5SRX, and H. E. Hutchins, K5SUD and maybe we we will have slow scan also.

DX AND QSL'ing by Donald Search, W3AZD, of ARRL.

MARS. There will be Airforce MARS, Hal Deitz, State MARS Director. Army MARS, Lionel DeMize. Navy MARS is tentative but not yet firm.

RACES AND ARES. An area that is vital to amateur radio and should be more of interest to many more of us individually in participation, is RACES and ARES forums directed by Fred O. Maia, W5YI, of Richardson TX.

OKLAHOMA REPEATER SOCIETY will be led by Dan Schroeder, K5FUL.

For the better halves--XYL's There will be a video tape presentation by Art Hernandez, KF5DK. It is sad but you ladies are needing every day to be able to defend yourselves.

Oh Yes!! Remember that the PHOTOGRAPHY forum is for everyone---That's you gals, too!!

GREAT PLAINS A R C

the mail to ARRL members. Please take time to read the resumes prepared by both candidates and learn a little about these gentlemen who are willing to sacrifice so much of their time for our fraternity. Most importantly, mail the ballot immediately. Your ballot must be received at ARRL Headquarters by 4 pm, Friday, August 15th. Remember, if you haven't returned your ballot by the time you read this article, the deadline for mailing is near.

REMEMBER THIS ?

While looking through numerous back issues of our Great Plains Ham News, provided by Lee Rogers W5HGH, an old flyer from the March 31-April 1, 1973 Woodward Swapfest was found. Talk in was on .34/.94, .52 direct and 3925 KHz. Motel prices were advertised at $10-$15 per night and the admission was $6.00 per adult and $2.50 for children which included the noon meal. The grand prize this year was an HR212 with a Motorola "Handie Talkie", a GE 60 watt 6 meter rig and assorted antennas listed as other prizes. An entirely separate women's program consisted of cosmetic, candle making, bottle cutting, easter egg decorations and tole painting presentations. A friendship room was reserved at a local motel but all the events were held at the Woodward Fair Building. It must have been quite an affair.

SOMEBODY DOES READ IT

As you may recall from last months article my call changed recently to N5JGQ from KA5PYA due to upgrade. Because I had included my phoenetic thoughts on the new call I received a very nice note from Bill Malicoat, NI5Y, from Henryetta OK. Bill sent along his congratulations and a set of phoenetics for N5JGQ. He maintains N5JOLLY GOOD QUEEN (his favorite), N5JOLLY GREAT QUEEN or N5JOLLY GRAND QUEEN should be considered. In a postscript, Bill states that he enjoys our column and wonders how he can receive the C&E on a steady basis. (Just subscribe, see page 3). Thanks Bill for the interest and suggestions.

Net activity on the Northwest Oklahoma Service Net and Severe Weather Net for the month of June was up markedly from May. June had 16 sessions, with 185 check-ins and 3 pieces of routine traffic being handled. Numerous sessions during June had 15 plus check-ins which is remarkable for this time of the year.

DON'T FORGET

The upcoming August meeting will be held in conjunction with a Sloppy Joe and Ice Cream feed. This meeting will be at Crystal Beach, August 5th at 7:30 pm hopefully in one of the shelters if available. Check in on the NWOSN for further details.

Lois, N5JGQ

COCO CONTINUED

items to use as door prizes and to Al Ingle for donating the printer paper.

Paul Pape - 089 PASCAL
Robby Runyon - hole punch
Nathan Roberts- wristwatch
Dale Goad - 089
David Sands - Chromasette
Jim Seals - stapler
Allan Atwood - June used disk
Shirley Gilliland - July used disk
Ron Folk - Assembly Language Programming book
Brian Davis - Color Graphics book
Steve Strong - printer paper
Cecil Borin - calculator
Bill Gilliland - TRS-80 Assembly Language Programming
Sandra Sanders - TRS-80 Assembly Language Programming
Kevin Lewis - VISICALC Applications
Robby Holmes - Computer Programming in BASIC for Everyone
Jeanette Roberts - Level II BASIC
Lee Jacobs - MULTIPLAN Applications
Martin Schiel - zilch

Program

I must apologize at the outset. Because I was conferring with my fellow CoCoFest committee members during the programs, I didn't catch enough of either one to give you a decent report.

Bob Pace discussed modifying R/S disk controllers to provide for two switchable DOSes. He spoke for about 30 minutes on this worthwhile project. The bottom line is that you can spend a lot of time and do it yourself, or you can spend $10 and he'll do it for you.

Sam Murr spoke on Elite File, but I didn't hear any of it. Sorry, Sam. I'll see you all at CoCoFest.

-- Martin Schiel, 670-6891

To err is human . . .

BUT TO REALLY FOUL THINGS UP
YOU NEED A COMPUTER

SI SEZ: "Drive defensively, buy a tank."
ED SED: "Policemen don't cop out."
ED SED: "Librarians are novel lovers."
ED SED: "Beat the system - unplug a computer."
SI SEZ: "TV is eyestrain with knobs."

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HAS YOUR ICOM BP-3 BATTERY PACK GONE WEST? EVER TRY TO FIND JUST ONE REPLACEMENT CELL? FRUSTRATING, AIN'T IT? WELL, FRIENDS AND NEIGHBORS, THERE'S AN EASY WAY OUT. OLD DON HAS FOUND A SOURCE FOR THESE LITTLE JEWELS AND, OUT OF THE GOODNESS OF HIS HEART, HE'S GOING TO LET YOU IN ON IT. HERE'S THE DEAL: OLD DON WILL SEND YOU, BY RETURN MAIL, GENUINE PANASONIC BRAND REPLACEMENT CELLS (WITH SOLDER TABS FOR EASY INSTALLATION) FOR ONLY $2.50 EACH. OR, IF YOU'RE SURE YOUR BP-3 NEEDS A TOTAL REJUVENATION, OLD DON WILL SEND YOU, BY RETURN MAIL, A COMPLETELY ASSEMBLED, FRESH, BRAND NEW SET OF SEVEN PANASONIC BRAND CELLS SOLDERED TOGETHER AND READY TO INSTALL IN YOUR BP-3 FOR ONLY $20.00. WHY SPEND $31.25 IN MILWAUKEE FOR A NEW BP-3 WHEN FOR ONLY $20.00 POST PAID YOU CAN HAVE A SET OF FRESH NEW CELLS IN YOUR PRESENT BATTERY CASE? OLD DON WILL EVEN SEND YOU AN EASY-TO-READ, EASY-TO-FOLLOW INSTRUCTION SHEET EXPLAINING HOW TO TEAR INTO THAT OLD BP-3 AND SOLDER IN THOSE NEW CELLS YOURSELF! NOW YOU CAN'T BEAT A DEAL LIKE THAT. ORDER TODAY. SUPPLIES ARE LIMITED. SEND YOUR CHECK OR MONEY ORDER, ALONG WITH YOUR NAME AND ADDRESS, THE QUANTITY OF INDIVIDUAL CELLS YOU NEED AT $2.50 EACH AND/OR THE QUANTITY OF PRE-ASSEMBLED SEVEN-CELL PACKS READY TO INSTALL AT $20.00 PER PACK TO:

OLD DON
7014 N.W. 61
BETHANY, OK 73008

YOUR ORDER WILL BE SHIPPED PROMPTLY BY RETURN MAIL.

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-

AUGUST

The managing editor assumes no responsibility for the data contained herein.

SUN	MON	TUE	WED	THU	FRI	SAT
HAM HOLIDAY 3	4	MORI 5 Great Plains	6	Aeronautical 7	HAM HOLIDAY 8	DAY 9 ARCADIA SCARS COCO
Wheatstraw 10	EDMOND CLUB 11	76'ers OU 12 OIDAR	13	ALTUS AREA 14 CP/M	15	16 VHF Club
EARS 17 24	VE EXAM RED CROSS BLDG. 18 6:00 PM	AUTOPATCH 19	20	CIMARRON 21 KAY County	ELECTION - ENTER 22	23
31	25	CORA 26	27	28	29	30

MID-OKLAHOMA REPEATOR, INC.
WA5YTI

For all you members who were unable to attend our meeting in July, you missed out on an interesting video called "The Wild Blue Yonder," which was about the history of the Air Force. No club business was conducted.

Don't forget that the MORI PICNIC/Ham Holiday recovery will be held on Aug 5 at 7pm at Bethany Eldon Lyons Park east shelter. The park is located on 36th street one-half mile west of Rockwell. Bring a covered dish and drink of your choice. If you want some hot stuff, a charcoal grill is available for use. Everyone is invited! Any one who would like to join in the fun is welcome.

Look for you at Ham Holiday!

-de KA5TSD

WIRELESS TELEGRAPHY

Proceedings of the Radio Club of America; also one on the Alexanderson alternator).

In this review, I've touched only a few highlights of this book; it would take a multitude of written pages and many pages of diagrams & photos to do it justice. My sincere thanks to the "Air Space Museum, Oklahoma City, and to Fred Boardman, W5NL, who very kindly made this book available to me for reading and for review. Its reading brought back many memories.

Carl C. Drumeller, W5JJ

Congratulations & many thanks to Carl for a super review of this earlier cited Tome of early Wireless accomplishment. Many of you, the readers, may know I am a Volunteer at the "Air Space Museum"-primarily the Research Library. This book, plus many others, was donated by the estate of Hope Biggers, whom many (FAA-ers in particular) were well acquainted. This was the only book I have discovered, so far, that reaches away back and is specific to our mutual Amateur Radio interests.

The book is not in the best of shape for continued perusal/review. However, I believe it can be made available to some who are definitely interested and would provide a "Careful Touch". Please contact myself if you the reader are interested.

73,Fred Boardman, W5NL

Everything comes to him who hustles while he waits.

ED SEZ: "Engineers never die they just lose their tolerance."

ED SEZ: "Love means nothing to tennis players."