CENTRAL OKLAHOMA RADIO AMATEURS
COLLECTOR AND EMITTER

50¢

VOL. 10 NOVEMBER 1984 NO. 118

HALLOWEEN
GREMLIN
BLACKCAT
HAUNTED
VAMPIRE
WITCH
GHOUL
FULLMOON
BEWITCHED
DRACULA
WARLOCK
ZOMBIE
GENIE
BROOMSTICK
CEMETERY
GOBLIN
SPOOK
SKELETON
PUMPKIN
WEREWOLF

```
* W D E H C T I W E B M S G S U B R D B A *
* M O O E K M A A R P S S W H L O A G W R *
* F V R H W L G H O U L N A G O B B E R D *
* M M O A U H L A A G D U H R U M U N U O *
* U L O C E O O H A L L Z H W A R S I E E *
* E S A O I A E A S H N L A K M T W E E N *
* L R E F L O W E R E W B M D M E G R W E *
* D B B A H O B C W H L O H A U N T E D E *
* B C R L N L K O O P S R A A W R E N G W *
* M A O L P O S Z S T A C K C A L B I P O *
* W C O W A N O E G E Z C G L R C D K R L *
* E R M U E I N M N T H O B E O E F P O L *
* E V S U U L A I L E W B M U O M R M U A *
* W A T O M B M A L L W M M B F E A U E H *
* H M I V B O E I S M U E W O I T M P Z W *
* L P C E A G H B M A E F W M S E B I A A *
* A I K K O W A H E B D R R U P R W W N L *
* R R W I T C H E L H A E G F D Y L A A O *
* R E S K E L E T O N C V O B R H E Z R H *
* P B U R D E F K C O L R A W W Z O G E S *
```

The answers will be found inside, UPSIDE down, BACKWARDS and STRAIGHT up.

HAPPY HALLOWEEN ! ! !

038411 048411

D.C. MACDONALD K2GKK
5120 SE 49
OKLA CITY OK 73135

```
* - D E H C T I W E B - - - - - - - - - - - *
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*********************************************
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K2GKK/5

HERE

ARE

THE

ANSWERS

Mike Kramer KA5NUP

146.025 / 146.625 REPEATER

FEEL FREE TO USE IT

THESE CORA MEMBER CLUBS PROMOTE AMATEUR RADIO

1 AERONAUTICAL CENTER ARC
MEETS: 7:30pm First Thursday Flight Standards Bldg., FAA, S. Macarthur

PR	WB5SVN	Jack Iman	677-8537
VP	N5ABL	Holly Holcomb	799-2539
Sec	WD5JPW	Gloria Seignious	722-1740
Tr	WA5CJG	Bob Pace	376-3569
EDITOR: Gloria Seignious, WD5JPW			722-1740

2 OKLAHOMA CENTRAL VHF CLUB
MEETS: 10:00am Third Saturday. Red Cross. 10th & Hudson(Back door) Okla City.

PR	KD5IS	Jerry Wetmore	524-5080
VP	KA5MYY	Chris Sartorious	728-0058
SE	K5JB	Joe Buswell	732-0676
TR	W5KE	Ellard Foster	789-6702
EDITOR: Joe Buswell, K5JB			732-0676

3 MID-OKLAHOMA REPEATOR, Inc.
MEETS: 8:00pm First Tuesday. Okla City EOC. 4600 N Eastern

PR	N5EPV	Bob Allen	Unlisted
VP	WD5ISS	Don Saunders	751-0404
SE	N5BEQ	Jim Buswell	236-0368
TR	W5KOZ	Sid Gerber	737-1050
EDITOR: Susie Atkinson, KA5FED			842-8014

4 OKLAHOMA CITY AUTOPATCH ASSOCIATION
MEETS: 7:30pm Third Tuesday. Okla City Fire Training Center. 800 N Portland

PR	WB5NDO	Kathy Whited	799-1457
VP	N5GWZ	Bob Northern	376-4287
SE	N5DLH	Vicki Adkins	722-6195
TR	KE5M	Ron Recer	341-7030
EDITOR: Bob Northern, N5GWZ			376-4287

5 OKLAHOMA UNIVERSITY AMATEUR RADIO CLUB
MEETS: 7:30pm Second Tuesday (Sep-May) 119 Wilson Center. 1334 S Jenkins

PR	KA5BAY	Luke Noah	325-1775
VP	KE5N	John Wustenberg	325-2382
SE	KA5COI	Peter Richeson	329-3217
TR	KA5LZN	Greg Smith	366-1641
EDITOR: Greg Smith, KA5LZN			366-1641

6 ALTUS AREA AMATEUR RADIO ASSOCIATION
MEETS: 7:30pm Second Thursday
North Main Fire Station (CD) Altus

PR	W5CCV	Joe McDonald	782-3454
VP			
S/T	WA5CBF	Loren Simms	477-0921
EDITOR: Loren Simms, WA5CBF			477-0921

7 BICENTENNIAL (76ers) ARC
MEETS: 7:00pm Second Tuesday. OG&E Bldg. SE 3rd & E. K. Gaylord Blvd.

PR	AE5N	Donald Duck	691-4199
VP	WD5JNT	Ted Vanlaningham	262-1675
SE	N5AUH	Jerry Sproul	354-2061
TR	WA9AFM	Tom Webb	737-6716
EDITOR: Jim Seals, KB5XN			381-2005

9 WHEATSTRAW AMATEUR RADIO CLUB
MEETS: 2:30pm Second Sunday. Location varies. See club section.

PR	KA5DUO	Leo Peil	886-2998
VP	WA5FLT		
S/T	K5GGL	George Maschino	263-7614
EDITOR: Marvin Stokes, WA5JHB			893-2221

QUARTER CENTURY WIRELESS ASSOCIATION
MEETS: Quarterly at various places.
NET: 3855 kHz Sunday at 8:00 am.

CHM	W5NL	Fred Boardman	427-2505
VCH	W5TY	Ray Long	942-4314
S/T	W5AS	Howard Baker	721-5453
EDITOR: Robert Runyon, AAØO			373-1818

13 KAY COUNTY AMATEUR RADIO CLUB
MEETS: 7:00pm Third Thursday
Ponca City EOC

PR	KA5PYG	Paul Davis	765-2227
VP	WA5UBO	Marsh Pronneke	363-2526
S/T	WBOVHC	Marvin Cullison	762-3981
EDITOR: Dave Land, KD5FX			762-8616

14 CIMMARON AMATEUR RADIO ASSOCIATION
MEETS: 7:00pm Second and Fourth Mondays. Place varies. See club section.

PR	WB5ECM	Dennis Painton	764-3599
VP	N5FUP	Steve Schoonmaker	886-3274
SE	N5FMH	Nadine Painton	764-3599
TR	N5FUR	Ruth Simpson	227-2791
EDITOR: Major Bailey, KI5P			227-2061

15 SOUTH CANADIAN AMATEUR RADIO SOCIETY
MEETS: 9:30am Second Saturday. Red Cross Bldg., North OU Campus. Norman

PR	KA5MIZ	Bob Rabin	360-6996
VP	KA5EFJ	Ken Neptune	321-7789
SE	WD5GTC	Gene Johnson	321-6759
TR	N5BEW	Ken Esadoah	329-4667
EDITOR: Sam Barrett, WA5RPP			321-2601

16 EDMOND AMATEUR RADIO CLUB
MEETS: 7:00pm Second Monday See club section for location and type.

PR	WB5UIY	Stan Van Nort	Unlisted
VP	WB5MLX	Glen Cochran	942-7148
S/T	WD5DYJ	Kay Northcutt	755-4672
EDITOR: Mark Northcutt, WD5DYI			755-4672

18 GREAT PLAINS AMATEUR RADIO CLUB
MEETS: 7:30pm First Tuesday
Civil Defense room, Woodward courthouse.

PR	WA5PLW	Windle Hatchett	766-3561
VP	W5KEK	Lewis Patterson	
SE	K5YZK	Jim Phares	254-2319
TR	KA5SDE	James Rockhold	
EDITOR: Jim Phares, K5YZK			

10 EDMOND AMATEUR RADIO SOCIETY
MEETS: Varies. See club section

PR	KBØOU	Cal Callison	751-3620
VP	WA5ZGM	John Keeling	340-1253
S/T	KC5GN	Bill Wright	341-6076
EDITOR: John Keeling, WA5ZGM			340-1253

20 ARDMORE AMATEUR RADIO CLUB
MEETS: 7:45am Saturday. Corral Restuarant
INFORMAL: Every Wednesday. 221 9th NW

PR	WD5FZD	John W. Merlyn	223-9543
VP	WA5IJA	Gene South	223-8252
SEC	W5JCX	jim Chilcoat	226-6816
TR	W5BLW	Charles Dibrell	226-0589
EDITOR: Glenn Hamilton, KE5ES			226-4379

CENTRAL OKLAHOMA RADIO AMATEURS, Inc.
MEETS: 7:30pm Fourth Tuesday. OKC Fire Training Center. 800 N Portland

PR	WN5NWX	Reggy Whited	799-1457
VP	K2GKK	D. C. Macdnald	672-4947
SE	N5BEQ	Jim Buswell	236-0368
TR	WDOFTM	Linda Callison	751-3620

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Joe Harding, WA5ZNF, 737-1044

CIRCULATION MANAGER:
Bob Graham, WB5NSV, 677-8685

ARDMORE

OCT. 21, 84 Ten amateur radio operaters perticipated in a SIMULATED EMERGENCY TEST (SET) Sunday afternoon. Conducted under the supervision of CHARLES DIBRELL W5BLW our EC. This will be Charles last offical SET as he is resigning as EC after 25 years of service. This four hour test checked communication by simplex on 146.52 and by two repeaters 146.19/79 a battery powered repeater located in down-town ARDMORE and on 146.37/97 a commer-cial powered repeater located in the Arbuckle Mts. A base station W5JP, located in the American Red Cross bldg. was operated on auxilary power through out the test. W5JP was mannéd by Glenn HAMILTON KE5ES, who acted as NET CONTROL assisted by JOHN MERLYN WD5FZD. A second base W5RFX operated by battery power with RUSS ANDATUBBY, W5RFX, proved to be a much more efficient than W5JP. W5RFX used rot-able twin beams at about 30'. This incre-ased the communicating distance a great amount over the unit at the RED CROSS.

Both mobile units and hand held units were checked at all locations. CHARLES W5BLW, traveled west thru Lone Grove into Healdton where he personally contacted LlOYD BENTON K5YTW, who had been pertis-ipating. TIM VANDERGRIFF WA5YOM and ERNIE MILLER W5SNM, traveled south thru Lake Murray, to Marrietta and on south on hiway 77 10 miles or so. All three frequencys were tried using the mobile unit and the handy talkies. At the extreme south lovation a portable beam was tried at about 20'. This proved to be very effective. Simplex contact could be made. This type of beam on a 30' portable pole type tower, such as we used on field day should be most effective. Additional check ins who helped in the test were JIM LE MARR KE5RC, Wynnewood, LLOYD BENTON K5RSK Healdton, CHARLES "CD" SCOTT K5RSK, Stratford, and HAROLD SLAPER K5BOV near Gordonville on Lake Texoma. Our generator at the Red Cross, developed mechanical problems and was not useable. This unit has been used many years without problems.

Age and inactivity appearently has taken it's toll. The water pump failed. Power was then supplied by W5BLW's portable Honda generator. My personal obeervat-ions would be: a most successful test. We turned up several problems which we need to correct before an actual emer-gency arrives. JOHN MERLYN WD5FZD

U.S. Postal Service

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☐ (1) HAS NOT CHANGED DURING PRECEDING 12 MONTHS ☐ (2) HAS CHANGED DURING PRECEDING 12 MONTHS (If changed, publisher must submit explanation of change with this statement.)

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PS Form 3526, July 1984 (See instructions on reverse)

TRS 80C Central Oklahoma Computer Organization

THE MICRO WORKS 'CBUG' MONITOR

A monitor is a program that will allow you to look inside the color computer, at memory, at the register, at ROM, at about anything the computer does.... AND MORE.
First lets look at the commands:
Commands are all one letter followed by whatever address the command need to know. All address's are in HEX.

COMMAND	FUNCTION
G	go back to Basic, unless a ML subroutin has been ran, then use '*'.
*	resets to basic
R	Register display
C	Change register list
M	Memory examine and CHANGE M 1000
I	Insert hex into block of memory I 1000 2000 FF block= 1000 to 2000, insert FF
T	Transfers block of memory T C000 D000 1000 block= C000 to D000, move to 1000
J	Jump to ML subroutine
S	save to cassette S 1000 4000 1000 filename
B	set baud rate B 0600 P = sets for printer B 0300 C = sets for modem
L	load hex L 1000 5F 4D 24 87 1000 = start adress, ENTER to exit
$	convert hex to decimal
.	convert decimal to Hex
P	moves display page P 0000 enter enter
U	upload (modem), set baud rate first U 1000 2000
D	download (modem), set baud rate first
!	Take over software interrupt
*	resets to basic
AU	AUTO mode- makes coco a intelligent terminal. set baud rate first. only reset will get you out of auto mode.
X	Terminal mode. this causes the computer to emulate a CRT terminal. baud rate must be set to 110. X F for full duplex and X H for half duplex. To escape from X, use (shift 0, H, shift 0).

Cbug is totally relocatable. EXEC address is same as start address. You need not type spaces in the commands, CBUG will put them in Automatically.
If you have not tried 'CBUG', you've been missing a very good monitor. There are other monitors on the market through, CCEAD, SIGNON and others. Each have there own niceties. Take Care!
Holly

THE FOLLOWING ARE HELPFUL HINTS THAT MOST ALREADY KNOW BUT MAY NEED A LITTLE IN MEMORY REFRESH. I HOPE THERE ARE HELPFUL TO YOU.

GET THE MOST MEMORY

YOU CAN GET THE MOST MEMORY AVAILABLE ON YOUR CC BY ENTERING THE COMMAND POKE25,6:NEW. THIS, IN EFFECT, IS A PCLEARO ON YOUR SYSTEM.

THIS COMMAND WILL NOT WORK WITH A DISK INSTALLEI IT WILL, INSTEAD, CLOBBER THE DISK OPERATING SYSTEM. IF THAT HAPPENS, SIMPLY (RESET) COCO.

COLOR COMPUTER 2 WARNING

IF YOU ARE UPGRADING YOUR NEW COCO 2 TO 64K, REMEMBER THAT THE 16K CHIPS YOU ARE TAKING OUT ARE NOT THE SAM AS THE 16K CHIPS(TYPE 4116) THAT EARLIER COCOS USED; THEY ARE TYPE 2118, WHICH USE A DIFFERENT POWER SUPPLY (+5 VOLTS ONLY) AND WILL NOT WORK IN EARLIER UNITS AND COULD CAUSE DAMAGE. (IF YOU INTEND TO DO A 32K "PIGGYBACK" EXPANSION ON YOUR COCO 2 USE ANOTHER SET OF 2118S, NOT 4116S THAT CAME OUT OF AN OLDER COMPUTER).

PRINT OUT DISK DIRECTORY

IF YOU WISH TO HAVE A HARD-COPPY PRINTOUT OF YOUR DIRECTORY, JUST POKE111,254:DIR AND THE ENTIRE DISK DIRECTORY WILL PRINT OUT.

64K MEMORY UPGRADE - COLOR COMPUTER 2

INSTALL A SET OF 4164 64K RAM CHIPS. SOLDER TOGETHER THE TWO ADJACENT PC BOARD HOLES MARKED W1 NEXT TO THE 6822 CHIP. PLEASE NOTE THAT THE OLD 16K CHIPS ARE DIFFERENT FROM THOSE IN EARLIER COCOS AND CAN'T BE USED IN EARLIER UNITS.

AUTOMATIC LOWERCASE

TO MOVE AUTOMATICALLY INTO LOWERCASE, TYPE POKE282,0. TO RETURN TO UPPERCASE, USE POKE282,1.

64K MEMORY UPGRADE - NC BOARD AND TDP SYSTEM 100

INSTALL A SET OF 4164 64K RAM CHIPS. CLIP OUT CAPACITORS C58, C60, C62, C64, C66, C68, C70 AND C72 LOCATED NEXT TO THE RAM SOCKETS. MOVE THE THREE 16K/64K JUMPERS TO THE 64K POSITION. SOLDER TOGETHER THE TWO BARE PINS NEXT TO U17.

RS-232 BAUD RTES

THESE POKE VALUES FOR THE COCO WILL CREATE THE 16MOST COMMONLY USED BAUD RATES. THEY ARE AS FOLLOWS:

BAUD RATE	POKE 149	POKE 150
50	4	88
75	2	227
110	1	246
134.5	1	153
150	1	110
300		180
600		87
1200		40
1800		25
2000		23
2400		18
3600		10
4800		7
7200		3
9600		1

TO ACHIEVE 19200 BAUD, ONE MUST USE THE POKES FOR 9600 BAUD AND THEN USE THE BOLD POKE (65497,0)

DISK OR CASSETTE I/O ERRORS?

MAKE SURE THAT THE DISK DRIVE(S) AND CASSETTE RECORDER ARE NOT ON THE LEFT SIDE OF THE TV SET (OR IF THEY ARE, THAT THEY'RE AT LEAST HALF A FOOT OR SO AWAY). THIS IS BECAUSE THE FLYBACK TRANSFORMER (WHICH IS ALMOST ALWAYS ON THE LEFT SIDE OF THE TV) PUTS OUT A GREAT DEAL OF RFI THAT CAN INTERFERE WITH CASSETTE OR DISK OPERATION.

KEYTONES PROVIDES AUDITORY FEEDBACK

KEYTONES IS DESIGNED TO PRODUCE A TONE THROUGH THE TV SPEAKER EVERY TIME A KEY IS PRESSED.

THE FREQUENCY OF THE TONE MAY BE CHANGED USING THE SOUND COMMAND (E.G.,SOUND225,1), BUT THE DURATION OF THE TONE IS SET AT ONE.

```
1 REM KEYTONES
2 REM BY JAMES PROVOST
10 FORX=1536 TO 1551
20 READ 1:POKEX,A
30 NEXT
40 POKE 360,6:POKLE 361,00
50 DATA 52,86,198,1,134,4,61,253,0,141
60 DATA 189,169,86,53,86,57
```

*IT'S NOT ALWAYS OKAY"

ARE YOU TIRED OF SEEING THE "OK" PROMPT FOREVER ON THE SCREEN, ESPECIALLY AFTERYOUR FAVORITE PROGRAM HAS JUST BOMBED? YOU CAN CHANGE THIS IF YOUR COCO HAS BEEN CONVERTED TO 64K. ALL THAT IS REQUIRED IS TO BE IN ATHE ALL-RAM MODE AND KEY IN THE FOLLOWING:

```
POKE$HABEE,&H2B:POKE&HABEF,&H2B
```

THIS WILL CHANGE THE PROMPT TO ++. YOU COULD USE ANY OTHER WYHBOL OF YOUR CHOICE.

*NOTE: FOR THE ALL-RAM MODE USE THE FOLLOWING LISTING:

```
10 'ROMRAM'
20 'THIS PROGRAM WILL
30 'MOVE BASIC TO RAM
40 'BY FRANK HOGG
50 CLEAR 999
60 DATA 26,80,190,128,0,183,255,222,166,128
70 DATA 183,255,223,167,31,140,224,0,37,241,57
80 FOR I=1 TO 21:READ A:A$=A$+CHR$(A):NEXT I
90 P=VARPTR(A$)+1
100 POKE P,126
110 EXECP
120 PRINT"BASIC IS NOW IN RAM"
```

JOYLIST

```
300 '*******JOYLIST*******
301 '**K.DEAHL - 9/06/82**
302 '************************
303 FORX=1000 TO 1015
304 READ A:POKEX,A:NEXT X
305 POKE 360,3:POKE361,232
306 DATA 52,86,189,169,222
307 DATA 190,1,91,48,1,189
308 DATA 167,211,53,86,57
309 END:'OR NEW,IF YOU LIKE
```

TYPE THIS IN, PLUG IN YOUR RIGHT JOYSTICK AND RUN THE PROGRAM. THEN PULL THE JOYSTICK BACK, TYPE LIST AND (ENTER); DO IT AGAIN, PERHAPS WITH A LONGER PROGRAM OF YOUR OWN, AND SLIDE THAT JOYSTICK UP AND BACK WHILE YOU "JOYLIST." IS THAT NEAT, OR WHAT?

THE ELS HAVE IT WITH THIS PROGRAM

```
100 GOTO 114 101 CLS0:Y=96:Z=1 102 FOR X=83 TO 173
STEP 30 103 PMODE1,Z:PCLS2:Z=Z+2 104
CIRCLE(X,Y),50,3,1.2 105 PAINT (X,Y),3,3 106
CIRCLE(128,Y),120,4,.4 107 CIRCLE(X+8,80),3,2 108
PAINT(1,1),1,4:NEXT X 109 PLAY"T255L255O4" 110
RN=RND(4)-1:P=1+RN*2 111 PMODE1,P:SCREEN1,0 112
PLAY"05BAGFEDCO4BAGFEDC" 113 GOTO 110 114
PCLEAR8:GOTO 101
```

VERIFY TAPE SAVES

TO VERIFY A TAPE SAVE FIRST SAVE THE PROGRAM AS USUAL. REWIND THE TAPE TO THE START OF THE FILE. TYPE SKIPF AND PRESS PLAY ON RECORDER. SKIPF WILL REPORT ANY TAPE I/O ERRORS IF THERE ARE ANYRECORDING ERRORS. SINCE THE PROGRAM IS STILL IN MEMORY ANOTHER SAVE CAN BE ATTEMPTED.

NAME DISPLAY

HERE'S A SHORT PROGRAM THAT TURNS YOUR NAME INTO A COLORFUL DISPLAY. REQUIRING 16K EXTENDED COLOR BASIC, NAM DISPLAY WILL CREATE DIFFERENT PATTERNS AND COLORS FOR EACH NAME.

PRESSING ANY KEY (BUT (BREAK)) RETURNS THE COMPUTER TO NORMAL TEXT MODE.

```
5 INPUT"YOUR NAME";A$
10 POKE 359,128
20 PRINT A$
30 B$=INKEY$:IF B$=""THEN 20
40 POKE 359,126
```

SAVING IN ASCII

WHEN YOU SAVE PROGRAMS, COCO CAN PERFORM THIS FUNCTION IN TWO WAYS; BY USING BINARY CODES OR ACTUAL LETTERS AND NUMBERS (CALLED ASCII AND PRONOUNCED AS-KEY).

ALTHOUGH IT TAKES LONGER, ASCII SOMETIMES IS A MORE ACCURATE WAY TO SAVE A PROGRAM, ESPECIALLY WHEN YOU MAY BE TRANSERRING PROGRAMS BETWEEN SYSTEMS - SAY FROM A DISK-BASED TO A CASSETTE-BASED SYSTEM.

TO SVE IN ASCII, SIMPLY ADD A COMMA AND AN "A" TO THE END OF YOUR "SAVE" INSTRUCTION, LIKE THIS: CSAVE"PROGRAM",A AND THE ASCII SAVE WILL BE DONE BY COCO.

SINELINES

IF YOU WANT THE GRAPHICS TO MOVE A BIT FASTER OR SLOWER, TO MATCH YOUR PREFERRED BEAT, THEN CHANGE THE S VARIABLE IN LINE 61 TO, SY, .05 FOR SLOWER MUSIC. EXPERIMENT.

```
10 REM**SINELINES, BY NORM CUTTER
20 PCLS:PMODE 4,1:SCREEN 1,1
60 B=B+1
61 S=S+1
70 D=D+Q
80 IF B 250 THEN PCLS:I=-2
90 IF D 180 THEN Q=-2
92 IF D 5 THEN Q=2
93 IF B 5 THEN I=2
96 X=(SIN(S)*129)+129
100 LINE(X,D)-(D,B),PSET
150 GOTO60
```

THE HIGH SPEED POKE

YOU CAN DOUBLE THE SPEED AT WHICH COCO OPERATES WITH A SIMPLE POKE STATEMENT, ENTERED EITHER DIRECTLY FROM THE KEYBBOARD OR WITHIN A PROGAH. THE STATEMENT IS POKE 65495,0.

NOTE THAT YOU CANNOT PERFORM ANY INPUIT/OUTPUT OPERATIONS, SUCH AS SAVING THE PROGRAM TO CASSETTE, WHEN THE SPEEDUP IS IN EFFECT. YOU MAY ALSO LOSE TEMPORARY KEYBOARD CONTROL. IF THIS HAPPENS, A SIMPLE PRESS OF THE (RESET) BUTTON WILL BRING THINGS BACK TO NORMAL, TOO. TO RESUME TO NORMAL SPEED, POKE 65494,0.

SINGLE DISK COPY

HERE'S A FEATURE WHICH CAN BE INVALUABLE FOR USERS WITH A SINGLE DISK DRIVE. A SINGLE DRIVE COPY CAN BE MADE BY DOING THE FOLLOWING:

1) INSERT DISK WITH FILE TO BE COPIED INTO THE DRIVE 0.
2) TYPE COPY"FILELNAME/EXT:0" AND PRESS (ENTER).
3) THERE WILL BE ONE SHORT BEEP AND A NOTICE WILL APPEAR ON THE SCREEN INSTRUCTING THE USER TO INSERT THE DESTINATION DISK.
4) INSERT THE DESTINATION DISK AND PRESS (ENTER) AND THE COPY IS MADE.

SLOW SCROLLING THROUGH ORANGE

HERE'S A POWERFUL LITTLE POKE THAT WILL SLOW YOUR SCROLLING BY CREATING A HORIZONTAL LIST. TYPE POKE359,60 AND YOU'LL SEE WHAT WE MEAN. ADD A COLON (:) AND SCREENO,1 AND YOU'LL BE SLOW-SCROLLING ACROSS AN ORANGE SCREEN. TO RETURN TO THE GREEN SCREEN AT FULL TILT, JUST TYPE POKE359,126.

THIS POKE WILL NOT WORK WITH THE DISK CONTROLLER APIUGGED IN.

CLOADM OFFSET

A. NEW LOCATION IS HIGHER IN MEMORY THAN ORIGINAL CLOADM "FILENAME" (NEW START ADDR - OLD START ADDR.). B. NEW LOCATION IS LOWER IN MEMORY THAN ORIGINAL CLOADM "FILENAME" (NEW START ADDR - OLD START ADDR)+65536. C. USE LOADM FOR DISK FILE OFFSET LOADING.

COLD POKE

IF FOR SOME REASON YOU WISH TO SIMULATE A COLD START-UP, TRY THE FOLLOWING:

```
POKE113,0:EXEC 40999.
```

WHAT'S YOUR ROM NUMBER?

WITH ALL THE TALK ABOUT NEW ROMS, YOU MAY BE WONDERING EXACTLY WHICH ROM YOU HAVE. IF YOU HAVE EXTENDED BASIC, JUST READ THE INGORMATION AT THE TOP OF THE SCREEN ON POWER UP. THEN, TO SEE WHICH COLOR BASIC ROM YOU HAVE, TYPE EXEC 41175 AND (ENTER).

IF YOU HVE THE NEW ROMS, THE EXTENDED BASIC WILL INDICATE VERSION 1.1 AND COLOR BASIC WILL BE VERSION 1.2.

TO HEX WITH DECIMAL

TO CONVERT HEX TO DECIMAL, WRITE:?&H(XXXX)(ENTER).

TO CONVERT DECIMAL TO HEX, TYPE: ?HEX$(YYYY)(ENTER).

THE FOUR X'S EQUAL THE HEX NUMBER, WHILE THE FOUR Y'S EQUAL THE DECIMAL NUMBER.

FINDING ML ADDRESSES

YOU CAN FIND THE ADDRESS OF A MACHINE LANGUAGE PROGRAM BY PEEKING SEVERAL ADDRESSES IN MEMORY. THOSE ADDRESSES ARE:

TO FIND THE START ADDRESS, JUST TYPE PRINT PEEK(487)*256 + PEEK(488)(ENTER).

TO FIND THE END ADDRESS, USE THE COMMAND PRINT PEEK(126)*256 + PEEK(127)-1.

TO FIND THE EXECUTE ADDRESS, USE PRINT PEEK(157)*256 + PEEK(158).

PMODE4 COLORS

HERE IS A SHORT PROGRAM THAT WILL PRODUCE MANY COLORS IN PMODE4:

```
10 PMODE4,1:=1:FOR C=1 TO 8
20 CLS:SCREEN 1,1
30 FOR I=1536 TO 7678 STEP 2
40 J=J+0.01:POKEI,J
50 POKE I+1,J:NEXT I:NEXT C
60 GOTO 60
```

THE WALLPAPER POKE

MARK CHARNEY, OF DENVILLE, NEW JERSEY, WRITES, "AFTER TOYING WITH SOME PEEKS AND POKES, I DISCOVERED THAT POKEING LOCATION 179 GIVES ME VARIOUS BACKGROUNDS WHEN PCLS IS USED."

HERE'S A LITTLE DEMO:

```
10 PMODE 3,1
12 SCREEN 1,1
14 POKE 179,RND(255)
16 PCLS
18 IF INKEY$=""THEN 18 ELSE 14
```

UNDOCUMENTED

I HAVE DISCOVERED A FEW EDIT SUBCOMMANDS THAT ARE NOT DOCUMENTED IN THE EXTENDED BASIC MANUAL. THEY ARE AS FOLLOWS:

A: CANCEL ALL CHANGES, LIST LINE, CONTINUE EDITING.

Q: CANCEL ALL CHANGES, STOP EDITING.

E: KEEP CHANGES AND STOP EDITING (SAME AS (ENTER)).

I HAVE NEVER SEEN THESE SUBCOMMANDS PUBLISHED IN ANY REFERENCE TO THE COCO, ALTHOUGH I CAN'T BELIEVE THAT NO ONE ELSE HAS DISCOVERED THEM. THE A AND Q CAN BE VERY USEFUL IF YOU MAKE A GOOF AND DON'T WANT TO TRY AND PIECE TOGETHER A LINE OR RETYPE IT.

(THIS HINT WAS PUBLISHED IN THE AUGUST 1981 EDITION OF THE RAINBBOW(VOL.1,NO.2), BUT IT'S TIME TO SHARE IT AGAIN.)

PROBLEMS WITH EDTASM+

I have received quite a bit of mail from readers who have been confused by the EDTASM+ instructio manual. Here are the symptoms: you've entered a listing from the magazine and are calling for an assembly using the EDTASM+ manual's recommended in-memory assembly command, A/IM/WE. But the listing consistently shows the wrong addresses and innounces bad memory or DP errors. What gives?

The answer lies in that in-memory assembly command. When EDTASM+ assembles the listing into memory, EDTASM+ puts the assembled results where it wants,not where the listing indicates. So, EDTASM+ tells you where it put your program, and identifies as errors any places where its assembly doesn't live with your listing's requests regarding direct page commands and available memory.

To test the accuracy of your typing, don't use the in-memory assembly! Instead of A/IM/WE (assemble into memory, wait for errors), type A/NO/WE (assemble without object code, wait for errors). You'll get a display of listing and labels, and only the real errors will show up.

If you must have an in-memory assembly (and you are sure it won't conflict with EDTASM+), type A/IN/AO/WE (assemble into memory using the absolute origin specified in the program listing, wait for errors). That will force EDTASM+ to respect everything you've typed in your program. Absolute origin means EDTASM+ will use whatever location your ORG statement says to use.

The other confusion with EDTASM+ is how to get effective and legible on-screen listings. Here's a summary of the most popular modes:

* A/NO/WE displays the listing and waits for each error, but doesn't create a tape. * A/NO/NL displays only the number of errors and the list of labels; A/NO/NL/LP is a good way of printing only a list of labels for your reference. * A/NO/NL/NS/WE displays nothing but the number of errors, stopping at each error to tell you what kind it is. * A/NO/NS/WE displays the listing and the errors, but doesn't whip that list of labels by at the end. * A/NO/SS/WE makes looking at errors easier, because it puts the assembled information (what EDTASM+ creates) on a separate line from the source information (what you've typed). * A/NO/LP sends a complete assembled listing to the printer.

B A S I C P R I N T E R L I N K

. The following subroutine will allow you to link the PRINT command of a COCO to both the screen and a printer. When the function is enabled anything that is printed on the screen will appear on the printer. The printer line width and baud rate must be set before the link is enabled.

```
10 P=0:P$="PRINTER OFF"  'INITIALIZE AS
PRINTER OFF

20 'PROGRAM BODY HERE. DO A GOSUB30 FROM
WITHIN PROGRAM TO TOGGLE PRINTER LINK ON AND
OFF

30 P=1-P:IFP THENP$="PRINTER ON":RESTORE:
FORX=1TO15:READA:POKE1007+X,A:NEXT:POKE359,126:
POKE360,3:POKE361,240:RETURN

40 DATA 52,22,198,254,215,111,190,160,2,173,
3,15,111,53,150

50 P$="PRINTER OFF":FORX=1007TO1022:POKEX,0:
 NEXT:POKE359,126:POKE360,203:POKE361,74:RETURN
```

Each time the subroutine in line 30 is called with a GOSUB30 the link will be turned either ON or OFF. When the printer is linked P=1 and P$="PRINTER ON". When printing is to the screen P=0 and P$="PRINTER OFF".

Robert Helms

HOW TO CORRECT TELEWRITER 64 FOR USE ON A COCO 2

MANY OF YOU MAY BE HAVING PROBLEMS WITH YOUR COPIES OF TELEWRITER 64. PERHAPS THE KEYBOARD ISN'T RESPONSIVE WHEN YOU HIT THE SAME KEY TWO OR MORE TIMES IN SUCCESSION. PERHAPS YOU'RE HAVING OTHER PROBLEMS. THE SOLUTION MAY BE VERY SIMPLE IF YOU'LL JUST FOLLOW THE INSTRUCTIONS BELOW.

YOU'LL NEED A MONITOR PROGRAM, SUCH AS SIGMON, THE ONE I USE HERE. UNDOUBTEDLY, THERE ARE OTHERS THAT WILL WORK, BUT THE ONLY ONE I'M FAMILIAR WITH IS SIGMON. SO, IF YOU USE A DIFFERENT MONITOR, THE PRINCIPLES ARE THE SAME, BUT THE INSTRUCTIONS MAY DIFFER SOMEWHAT.

TO BEGIN, LET'S LOAD TW64, THE MACHINE LANGUAGE PORTION OF TELEWRITER:

```
CLOADM"TW64" (ENTER)
```

NOW, YOU NEED TO LOAD SIGMON WITH AN OFFSET, SO THAT IT DOESN'T OVERLAY PART OF TW64:

```
CLOADM "SIGMON",$H3200  (ENTER)
```

THIS HEXADECIMAL 3200 OFFSET PROVIDES A REASONABLE BUFFER BETWEEN THE END ADDRESS OF TW64 AND THE START ADDRESS OF SIGMON. YOU CAN USE A LARGER OFFSET IF YOU WISH, BUT YOU PROBABLY SHOULDN'T USE A SMALLER OFFSET OR YOU MIGHT WIPE OUT THE TAIL END OF TW64.

WHEN OK APPEARS ON THE SCREEN ENTER EXEC TO EXECUTE SIGMON. NOW, LET'S GET INTO THE HEXADECIMAL MODE:

```
MODE H  (ENTER)
```

NEXT, TO FIND ALL OCCURRENCES OF A1C1, THE CHARACTER STRING THAT WE WANT TO CHANGE, TYPE IN:

```
FIND 1E28 3FEB $A1C1  (ENTER)
```

SIGMON WILL RETURN THIS LINE:

```
1EFB 200F 2600 3559 3938 3B0B
```

THESE ARE THE ADDRESSES IN MEMORY WHERE THE OCCURRENCES OF THE AFOREMENTIONED CHARACTER STRING RESIDE. IT'S UP TO YOU TO DETERMINE WHICH OCCURRENCES TO CHANGE. (IF YOU MERELY CHANGE ALL SIX AND TRY TO RUN THE PROGRAM, IT WON'T WORK.)

SO, WHICH OCCURRENCES DO YOU CHANGE AND WHICH DO YOU LEAVE ALONE? BEFORE ANSWERING THAT QUESTION, LET'S ASK ANOTHER: WHAT ARE WE CHANGING ANYWAY? OUR GOAL HERE IS TO CHANGE THE START ADDRESS OF SOMETHING CALLED A "JUMP TABLE" WHEREVER IT APPEARS IN THE PROGRAM. THE START ADDRESS USED TO BE A1C1 IN THE OLD ROM, BUT NOW IT'S A1CB.

STILL, I STILL HAVEN'T PINPOINTED WHICH OCCURRENCES NEED CHANGING. WE'LL HAVE TO EXAMINE EACH INDIVIDUALLY, LOOKING FOR SOME SORT OF BRANCH INSTRUCTION. LET'S DISASSEMBLE A SUFFICIENT RANGE OF MEMORY AROUND 1EFB, THE FIRST OCCURRENCE OF THE STRING, TO SEE WHAT INSTRUCTIONS RESIDE THERE. IT'S IMPORTANT TO START DISASSEMBLING FAR ENOUGH BEFORE THE LOCATION SO THAT THE MONITOR WILL BE ABLE TO DISASSEMBLE THE INSTRUCTIONS PROPERLY. TYPE IN:

```
DIS 1EF0 1F00  (ENTER)
```

SIGMON WILL DISPLAY SEVERAL LINES, BUT FOCUS YOUR ATTENTION ON THIS ONE:

```
1EFA  BD A1C1  JSR A1C1
```

THE JSR INSTRUCTION IS A JUMP TO SUBROUTINE, OR, IN OTHER WORDS, A BRANCH. HENCE, YOU DEFINITELY SHOULD CHANGE THIS ADDRESS TO A1CB. TYPE IN:

```
ASM 1EFC  (ENTER)
```

SIGMON WILL RESPOND WITH 1EFC=. WHEREUPON YOU TYPE IN:

```
$CB  (ENTER)
```

SIGMON WILL RESPOND 1EFC=, AND YOU SIMPLY HIT THE (ENTER) KEY ONCE AGAIN. NOW TO CHECK YOUR HANDYWORK, AGAIN TYPE IN:

```
DIS 1EF0 1F00  (ENTER)
```

SCAN THE LINE NUMBERED 1EFA TO CONFIRM THAT YOU HAVE SUCCESSFULLY CHANGED THE ADDRESS TO A1CB.

NEXT CHANGE THE SECOND AND THIRD INSTANCES OF THE STRING AS YOU MODIFIED THE FIRST. LET'S EXAMINE THE FOURTH OCCURRENCE MORE CLOSELY, HOWEVER.

```
DIS 3548 355D  (ENTER)
```

SIGMON DISPLAYS SEVERAL LINES, INCLUDING THIS VERY INTERESTING ONE:

```
3559  A1 C1  CMPA U++
```

OBVIOUSLY, THIS IS NOT A BRANCH INSTRUCTION OF ANY TYPE, SO DON'T CHANGE ANYTHING AT THIS LOCATION. HOWEVER, YOU SHOULD CHANGE THE REMAINING TWO OCCURRENCES OF A1C1 TO A1CB.

NOW, HAVING UPDATED OCCURRENCES 1, 2, 3, 5, AND 6, YOU SHOULD SAVE THE MODIFIED PROGRAM TO TAPE IN THIS MANNER:

```
WRITE "TW64" $1E28 $3FE8 $1E28
```

BE SURE TO MAKE SEVERAL COPIES JUST TO BE ON THE SAFE SIDE.

MANY THANKS TO BOB HELMS, WHO TOLD ME THE OLD AND NEW ADDRESSES OF THE "JUMP TABLE", AND TO BILL WARREN, WHO LOANED ME HIS COPY OF SIGMON.

WANTED: Radio Shack TRS-80 Model I Level I
Drake Touch-Tone Microphone
Contact Bob, KA5ETA 799-1765

VIDTEX COMMANDS
COMPUSERVE VERS 4.0

THE META KEY IS THE UP ARROW
CONTROL KEY IS THE DOWN ARROW

```
META     M     -     META     FUNCTION     MENU
META H - HELP PAGE
META     X     -     EXITS    VIDTEX     PROGRAM
META     O     -     OPENS     RAM       BUFFER
META     C     -     CLOSES    RAM       BUFFER
META     Z     -     ZEROES    RAM       BUFFER
META G - ADD SCREEN TO BUFFER (DOESN'T OPEN OR
CLOSE THE RAM BUFFER.)
META       D       -       DIPLAYS       BUFFER
META     P     -     PRINTS     THE      BUFFER
META    S    -    SAVE    TO    DISK    (EDITED)
META   U   -   SAVE   TO    DISK     (UNEDITED)
META    L    -    LOAD    BUFFER    FROM    DISK
META V - XMITS BUFFER
META   Y   -   XMITS   1   LINE   AT   A   TIME
META : - PRINTS SCREEN
META       A       -       ABORT      FUNCTION
META     F     -     SET     FUNCTION      KEYS
META       I       -       CREATE      AUTOLOGON
META      J      -      EXECUTE       AUTOLOG
META   Q   -   SELECT  COMMUNICATION  SETTINGS
META     E     -     WORD     WRAP      ACTIVE
META     B     -     WORD     WRAP     INACTIVE
META    K    -    TOGGLES    SCREEN     COLOR
META CLEAR - CLS
```

CONTROL CHARACTERS

CONTROL A - SUSPENDS DATA BEING RECEIVED. PRESSING CONT. A REPEATEDLY SENDS 1 LINE AT A TIME.

CONTROL S - SUSPENDS OUTPUT IMMEDIATEL..

CONTROL Q - RESTOES OUTPUT AFTER A CONTROL A OR CONTROL S.

CONTROL C - INTERRUPT!

CONTROL H - BACKSPACE

Q. R. Zedd

THE GREAT SHOOTOUT: ZEDD VS. BADENOV

As faithful readers will recall, we recounted last month how Boris Badenov, the Soviet DX ace, visited Oklahoma recently along with his brunette, nubile, 19-year-old secretary from Box 88, Natasha Bullwinkle.

After taking part in a celebrity dinner in Oklahoma City for the Russian delegation trying to trade three broken tractors and a Swan 350 for several million metric tons of American wheat, Badenov and his friend visited Norman where they were honored by a literary organization on the OU campus which makes a habit of honoring people with obscure reputations in faraway lands.

They then visited Oklahoma's great Q. R. Zedd, A5A, at his home, Honor Roll Ranch, just a hoot and a holler south of the city beautiful. Badenov set a new world record for Coors and Twinkies, and Natasha threatened to stick the darling Tondelayo Schwartz with a knife.

For new readers, Tondelayo is Zedd's nubile, 20-year-old QSL secretary and constant companion.

During the course of the festivities, Zedd suggested an ultimate test to determine who was the greatest DXer. After hearing the proposal, Badenov extended his leave from the Great Red Army and accepted the challenge on the spot.

It took a while to set things up, but the shootout took place just before Halloween. The scene was Honor Roll.

Drawn up facing each other at a range of 1,000 yards on a grassy pasture in the south part of Honor Roll were two 60-foot camper trailers, one for Zedd and one for Badenov. Each was decorated in the favorite style of its occupant: Zedd's with interlocking OUs on the sides and an American flag, Badenov's with hammers and sickles and various anti-imperialist slogans. Each had a 90-foot crankup tower topped by stacked monobanders, and inside, each had KWM-380s, outboard extra receivers, an identical kilowatt amplifiers. Mikes, keyers, logbooks, and (in Badenov's case) several thousand cans of refreshment completed the stations.

By complicated formula agreed upon by the contestants, the winning score would be computed after four hours on the basis of total contacts multiplied by statute miles from Honor Roll to the contact divided by a rarity factor on the contact which it took the two great men almost a month to agree upon.

Naturally, if either contestant failed to work everything on the DXCC list, he was automatically disqualified.

Neutral observers from the ARRL and Box 88 monitored. Tondelayo, in a darling fuschia jumpsuit, and Natasha, wearing a jet black rubber leotard with her knife stuck in the thin gold belt, did the logging.

The contest started at 0000 Zulu.

Well, the antennas started spinning in all directions atop both campers, and little purple-white corona effects could be seen on the element tips as darkness crept in. You could have heard both Zedd and Badenov in several countries if they had had a power outage, as their excitement led both of them to use the Townsend effect of shouting as loud as they could, and swallowing the microphone.

In the early going it looked like Zedd was going to be an easy winner as he racked up 217 countries in the first forty minutes, and got a 5-9 from a remotely operated quake detector left by one of our Apollo teams on the moon. But then in the third hour Badenov really got into it by logging a long-delayed echo from Marconi, and logging 16,500 Russian stations.

Zedd, who still didn't have a Soviet station in his log, tailended on about 4,000 of these contacts before shoving his chair back from the table and giving Tondelayo and this reporter a dismayed look.

"What is it, honey?" Tondelayo moued. "Those communists always love to work you!"

"It's got to be that Boris got word out for nobody behind the Iron Curtain to answer my CQs or QRZs," Zedd said darkly. "He is playing dirty pool." Zedd then called Badenov a name for which parental guidance is suggested.

Well, there was nothing to do but go on with it, despite the worry now heavy in the Zedd shack. The great one worked some 3Xs and 4Ws and all manner of good stuff, including some on delayed echoes from a year or two back. But wouldn't you know it, his receiver was acting up a little and his worry was clearly growing.

Over in the Badenov shack, the floor was knee deep in Coors cans, Badenov was singing lusty army songs between contacts, and Natasha was whirling about in the garbage, doing wild Russian folks dances and whanging her tambourine.

"Is over, da?" Badenov chortled. "Is decadent American defeat at hands of truly greatest Dxers, my own self! Ha!" And he popped another can top.

Back at Zedd's part of the ranch, the gloom deepened until there were about fifteen minutes to go in the contest. Zedd was so far ahead on total contacts and points that it wasn't even close, but those suckers in Russia would not work him, and without one of them in the log for each district, Zedd was an automatic loser.

"Dadblame!" Zedd cried in despair. "Heck!"

Tondelayo had an inspiration. "Let me try, darlin'."

Zedd blinked, but handed her the mike. She cranked the antenna around for the polar route. She keyed the mike.

"Hi out there in radioland," she whispered in the most sultry tones you ever heard. "Is they anyone that'd like to QSO... or anythang... with little ole lonely me? Go ahead."

Well, as everyone knows, Russians are, shall we say, zesty where it comes to women. The pileup from over the pole was fantastic. Tondelayo started picking up calls like mad, and making little breathy noises into the mike every little while, and listing the calls she had worked. As we sat there in amazement and admiration, she worked everything behind the Iron Curtain in about four minutes.

"Thanks, y'all," she cooed finally. "This is Tondelayo sayin' bye-bye, now. Incidentally, we ID'd just before I took over as control operator, but in case you want to make sure for your darlin' little logs, this is A5A. That's Alpha fiuve Alpha. Y'all be nice, now. Bye."

In the Badenov trailer, Natasha stuck her tambourine with her knife.

Scoring results have been frontpaged in the nation's press, of course, and everyone knows how Zedd has since been feted in Washington.

Badenov? We aren't sure. Right after it was clear he had come in second, this helicopter landed in Oklahoma City and a limousine took several large, lumpy men in black suits away someplace. Badenov was sulking in his Oklahoma City hotel that same Tuesday night, but the next morning all the cleanup people found was some unopened Coors and some half-eaten Twinkies crushed into the shag carpet.

Clearly they had left in a hurry. Natasha's shopping bag from Frederick's of Hollywood was left behind with all the goodies still in it.

The hotel bill was handled with a Visa card listing a KGB address.

At presstime, Zedd was out hunting for his Thanksgiving turkey. -- KU5B

CENTRAL OKLAHOMA CHAPTER #63
CHARTERED MARCH 19,1973

FILE ZERO - robby AA0O

Once again, the machine has won a confrontation. This time I had the entire column written when I went back to add a remark to the next-to-last paragraph...That's when the processor hung up on me locking all into memory with no apparant way to get it out. With about two hours work in the machine, it was very hard to dump it and start over.

Fred called me last night, said he had a large amount of copy for this months column...since I'm going to be on the road cvbnm,./;lkjdline time, he will give it directly to Joe.

I owe an abject apology to Bob, W5JME for missing two items in last months column. In the rush of taking delivery on a new travel trailer, moving in to same, and getting it out of town for a "maiden cruise", I overlooked some copy he had timely sent me, and I subsequently misplaced. By missing the first item, I have damaged a worthwhile project. I'll reproduce his article anyway in the hopes it will encourage some discussion and action for a scrapbook project.

Glo and I spent the first two weeks of October on the road in New Mexico. Had a grand time on the desert, and only went on hook-ups for 48 hours when the breaker in the charge line failed, and the trailer batteries went flat before I caught it. We had to recharge them from commercial power at one of the ranches where we camped & explored. Visited only one "tourist trap" during the whole trip, and that was in Albuquerque on the way home when we stopped in on the annual hot-air baloon festival, and visited "old town" for a while one afternoon. "Old town" is one of the finest tourist traps around...full of folks. We made concerted efforts to stay away from "folks" to the maximum, and had reasonable success on this trip. The main reason for the trip was to visit "Trinity Site" birthplace of the so-called atomic age, which we did. Got my picture taken standing on "ground zero" almost forty years after the initial detonation. There were lots of folks there, also, but of a different kind. Trinity Site was no tourist trap...believe it.

What made the trip important to me was that I remember exactly where I was at 5AM Central time on the 16th of July 1945 when I saw "el diablo" flash on the horizon. I didn't know what it was untill some time later, but I swear, I saw the flash that morning. This year a long standing desire to see that place was fulfilled.

Most of that trip was spent with just Glo and I on the desert armed with sidearms, cameras, and rock picks playing explorer.

As usual, I packed an impressive assortment of radio gear into the trailer...and as usual, it never got unpacked for the whole trip. There is just something about the desert which makes outside human contact kind of superflous. I had promised a couple of friends that I would come up on kadiddlehoppers 7253kHz, if I got on at all. Hope nobody expected me to keep my word.

I did have some very good 2m contacts while in transit. As with the rest of the country in recent times, that part of the world is

GENEALOGICALLY SPEAKING

For a few years the XYL has indicated a desire to explore Iowa and research official records for information on her maternal grandfather and others who were in central Iowa in the late 1860's and early 1870's.

That, plus my own desire to miss a little Oklahoma heat led to our departing Midwest City via motorhome (complete with mobile rig plus a schedule with Fred W5NL on 7 August 1984.)

Without dwelling too much on detail here are some of the thumb-nail descriptions and impressions gleaned from that excursion, Hi!

Northern Okla...hot and dry -- also Kansas, as we climbed over heat waves that rose from I-35 toward Kansas City -- rangeland in eastern Kansas I didn't know existed -- The Mighty Missouri at Kansas City; a shady well-groomed rest-stop and information desk just a few miles inside Iowa -- the exceptional campgrounds on Saylorsville Lake north of Des Moines -- the scope of information at the Historical Library plus the friendly and expert assistance of the staff -- the picture-book farms in eastern Iowa -- the prowl through various shops of the Amana Society in eastern Iowa; the beautiful grounds of the capitol at Madison, Wisconsin on an early Sunday morning -- the Wisconsin Dells sightseeing area -- the boat-ride on the Wisconsin River;

Then the scenic and beautiful drive along the Lake Michigan from Green Bay to St Ignace -- the stately Mackinac Straits with their magnificant 5-mile bridge, its suspension span being one of the longest in the world -- the Soo Locks at Saulte St. Marie -- working Canada on 2m FM with an HT standing in a laundromat parking lot!!! (Of course, he was only a few miles away and we were using 34-94 - Hi!) -- rather thinly populated in Upper Michigan, we noticed ... we guessed the frigid winters may have something to do with that -- driving across the Mackinac Bridge toward Lower Michigan -- stopped at small sandy boatlaunch and gull park out from Pinconning, Michigan to let XYL wade in her third Great Lake on this trip, Lake Huron (#1 was across the road from our campground on Lake Michigan, #2 was in Lake Superior off Whitefish Bay) --- on to Brown City, Michigan, the birthplace of our camper, to have a fresh-water-leak repaired -- more beautiful fields of corn, soybeans, and vegetables - went by Lansing to get picture of Michigan State Capitol -- grounds less well-groomed than most - probably less water and care, but a gleaming white dome that was striking.

We then drove down through Indiana...(no pic of cap. made it in 1978) .. Then to Louisville to resume the genealogical research -- the OHIO River was quite a stunning sight -- I think we should put in an order to get one of those down here in Oklahoma!!! -- I had not known there was such a thing as SAR (Sons of the American Revolution) but in Louisville there is an extensive GenealogicalLibrary based on their data -- also more research data available in Frankfort at the OLD STATE HOUSE Historical Library -- horse farms and tobacco farms of all sizes began showing up in in central Kentucky -- from Frankfort area we drove south into Somerset (Pulaski County) and Montecello (Wayne County) - all four of the XYL's grandparent families were in this area in 1850 and her parents' families migrated to Central Texas in the period 1853-1871) -- examined records in both county seats and have enough information to keep her (NOT ME!!) busy for quite a while -- Hi!

The General Burnside Island State Park on an island in Cumberland Lake is another of the well-groomed parks, having a causeway built

.o connect hiway and island -- visiting several cemetaries we were able to locate graves of two sets of great-gransparents and other kinfolks -- action initiated in Kentucky for the Bicentennial (1976) has led to better records and maintenance of all graveyards....

At one point, far off the beaten path out on a curly road among the mountains we stopped to ask information of three men standing between two pickups.... out Oklahoma license plate took the eye of the biggest one of the three and he came to us and said "What in the world is someone from Oklahoma doing out here???" --- he turned out to be Mike Coates from Bartlesville who played Sooner Football as a linebacker 4-5 years ago and was a roomate of Bill Bectol from Midwest City! Mike was working on oil lease business in southern Kentucky! SMALL WORLD! -- On the way down through the last few miles of Kentucky and OH! Mercy! through some of Tennessee were some of the crookedest roads you will ever see!

Finally I-40 then west toward Oklahoma -- pretty area around Nashville: Maybe we should have gone to Loretta Lynn's Dude Ranch -- here's Memphis and the MIGHTY MISSISSIPPI -- busy campground in eastern Arkansas -- Next day we saw a badly damaged burning truck in the east-bound roadway -- it had hit a bridge and we didn't know what happened to the driver.. hiway patrol and emergency vehicles were at the scene --- the accident had east-bound traffic backed up for several miles -

Then on to Little Rock, Fort Smith, past Blue Ribbon Downs (no horse in sight!), Pharoah, Okla and HOME!!!

One of the pluses while travelling has to be the advantage of being an Amateur Radio Operator (of NUT or BUG or whatever). With the assistance of Fred W5NL, and George W5DKC I was able to keep up with the happenings back at home base. It is downright pleasant and reassuring to hear a very familiar voice calling you righ on schedule, and be able to respond and have a QSO from deep in a forest campground, the Capitol parking lot at Des Moines, Iowa, on I-75 in northern Michigan, on an island in Cumberland Lake, or on I-40 east of Little Rock, Arkansas. We completed 14 of 16 scheduled QSO's! Forty meters cooperated very well! Thanks again, Fred and George, and I hope I may one day get the chance to return the favor!

We arrived home in Midwest City at 4:30 p.m., 25 August '84 pleasantly tired, and lugging another set of memories to file in the memory bank of our slow computer!

BOB W5JME

QCWA Scrap-Book: ALL MEMBERS

We need your input for the QCWA Scrap-Book ASAP (As Soon As Practical). Basic need is a QSL card (which can be manicured to fit the space), a current picture of the home station, plus the operator (the operator can either be in the picture or solo as you desire). Any other items may be included at your pleasure - a treasured QSL, old rig photos, xerox copy of 50 year certificate, antenna photos, etc.. Please mark all items on the back for for future identification purposes. The books are ready, and we need your items.

Please mail or hand carry your items to Fred, W5NL or Bob, W5JME. We would like to have books ready for the next quarterly meeting 21 October 1984. (my fault...this should have been in the last issue. -ed.)

Tnx Bob W5JME

THEORETICAL OR EMPERICAL?

A group of Radio Amateurs (mostly retired Electronics Engineers) was sitting around a table at the Warr Acres Senior Citizens Center, sipping coffee and bouncing the bull, when a question came up about continuous-wave versus voice-peak amplitude of RF output of a transmitter. There were learned discussions involving sine-wave and voice-wave patterns, power supply short-term regulation, and other semi-related subjects. After some minutes it was suggested that many Radio Amateurs possessed equipment capable of ascertaining which gave the greater amplitude.

At this point N5CC pointed out that there was grave danger of limiting a free flow of contentions if stark truth were known, arguing was preferable to knowing.

Technical conversation languished, shifting to politics, thereby indicating that members of the group were "too far over the hill" to have primary interest in such normal subjects as whiskey and women.

The next day, W5NTL came in and announced that he'd flown in the face of tradition, and made an emperical determination: Peak voice amplitude never can exceed the maximum continuous-wave amplitude.

Oh, hell! Now we'll have to find some other nebulous subject for earnest and learned depate! (and find it they will too!...bet on it! -ed.)

W5JJ

TRAFFIC REPORT

The following is excerpted from Howard's W5AS, report to W5REC for the month of September:

On the air communication during September 1984 for QCWA Chapter 63 as follows:

Sessions	5
Check-Ins	191
Traffic	29

Howard W5AS, Sec/Treas.

MORE ON RECHARGEABLE CELLS

The pros and cons of treating nicad cells goes on forever. The latest (and perhaps the best) is found in June '84 issue of AMATEUR RADIO. Read it in full in the ACARC clubroom.

Incidentally, the closely-guarded secret of how a person can subscribe to AMATEUR RADIO has been broached. Send $35 (U.S. -ed.) to Wireless Institute of Australia, 412 Brunswick Street, Fitzroy 3065, Australia. Note their "Zip Code" has only four numerals!

W5JJ

BETTER STOCK UP ON VACUUM TUBES!

A bote to the wise: More and more manufacturers are discontinuing certain lines of vacuum tubes. Oft-used 6JS6C is being dropped by two manufacturers who made the best-working brands. (And don't have any illusions about all brands performing equally well! It just ain't so!) It's rumoured that RCA is dropping the 6146B, leaving GE as the only producer of a good-pe.forming brand.

W5JJ

MORE QCWA

THE CHAIRMAN'S CORNER

Dateline:Forest Park,Ok.,Oct. 19, '84..File 3.

This month, kind of a mini-trip report,but included, I consider, some very important information that should interest many/particularly QCWA membership. The past weekend, Oct. 12, 13, 14, Margaret/Maggie & myself embarked on-thoroughly enjoyed-our Annual Foliage Tour of eastern Oklahoma and western & N. central Arkansas. Our oft savored "riot of color" was clearly missing, but more evident driving from Fayetteville to Harrison, via Huntsville. We RON'd with daughter & family at Fayetteville Friday & Saturday-thence proceeded early Saturday to Harrison to participate & represent Chapt. 63 at Razorback Chapter's annual fall meeting-Ramada Inn. An excellent, very informative meeting (10:30-14:45) with fifty two (52) attending. Meeting adjourned by popular vote just in time for start of "Cotton Bowl Shoot-Out". With so much subsequently written of that contest-shall dwell no further.

The main program started with a condensed slide/taped narrative of the 1st Apollo Moon Landing (LEM etc.)-presented by Jim Paul,KC5-LL, Yellville, Ar. Slides/Commentary jogged many memories-footprints, moonwalk, "One big step for mankind" by messr's Armstrong and Aldrin and with Gordon Cooper orbiting above. The gals then retired to a separate Famada meeting room & had their own "shoot-out" for the rest of the meeting.

Leland Smith, W5KL, Jasper, Ar., QCWA Inc. Vice President (well known to many readers)-back from QCWA Convention, Windsor Locks, Con. (Sep 21, 22, 23) presented lots of "goodies" from the all day Directors Meeting-important highlights as follows:

*Sid Porkony, W5UAU and XYL Bertha also attended the Convention. Sid, stated he was slightly miffed at being unable to monitor the Board Meeting, but understood the Why not.

*QCWA is growing (over 10,000 active members) worldwide. Chapters (150 plus) are the main motive power for attracting new membership. Some dormant chapters are being revitalized. FRG (Germany) Chapter 106 is reputed to be the largest, internationally, with 200 plus membership.

*QCWA Inc., National/International is presently governed by Four Officers and Ten Directors. Elected at large, Board Members do not represent geographical areas because membership is not uniform nationwide or worldwide. We are thus unlike ARRL Directorships with geographical divisions that are somewhat equal as to membership population. Gehard Jacoby,DL3ME Director from FRG, very personable-an attorney -has provided much guidance to flavor QCWA Internationally.

*A Chapter Manual is nearly completed for early 1985 publication and mailing to Chapter Presidents & Secretaries. Tells everything you always wanted to know, but didn't know who to ask. (50-50 pages).

*A Convention Manual is in preparation (Director, Lew McCoy Chairman). Gives all important information on "How to sponsor a QCWA Convention". The next Convention will be held at Charlotte, N. C., October 11, 12, 13, 1985.

*A Directors Manual has existed for sometime. Contains much useful information to enable newly elected directors to get a "QuickStart".

*Activities Chairman is Leonice (Oney)Woodward, W1ZEN of Quarter Century Wireless Women (QCWW) Chapter 120. Formulates & schedules CW & Phone Parties. Ofparticular interest, a QCWA Invitational (Sept. '85) to non-QCWA-ers, obtaining Calls, State & Year First Licensed. Information gathered will be collated by computer and a form letter & membership application sent to eligible amateurs. Ed. Note) The info above & following info will be in the next QCWA NEWS. Am curious to how accurate a reporter I might be!!!

Leland had too much information on the Volunteer Examining Program (VEC/VE's etc.). The program very well organized and ARRL certainly recognizes VE's from all QCWA Chapters. Will only cite a few of the problems & information from Leland:

*Appears there are not enough Extra Class Amateurs. QCWA will petition to utilize Advanced Class Amateurs to administer General and Advanced examinations.

*The present 13 WPM code speed was a compromise from those wanting 10 WPM and 15 WPM many years ago. QCWA will petition for a change to 10 WPM for General Licensing. Ed. Note not certain if Advanced was included. So far ARRL has not voiced an opinion.

*The QCWA Board does not readily recommend that individual QCWA Chapters petition to bece ome VEC's.

There was much much more information via Leland & others, but I have run out of time to get this to Joe Harding, Managing Editor. One final item tho-The QCWA NEWS will shortly be published on a monthly basis but will be streamlined. Imagine this will keep Ted, W5EJ very busy-and others who need to imput. The HOT-LINE report will continue also.

___73 Fred, W5NL___

Ray Long, W5TY, just informed me he had received a 50 Year Certificate from QCWA, Inc. Accolades to you Ray. Forgot to ask if it was continuous but will assume so. Intend to present at our October 21st Fall meeting with appropriate photography. While on the subject ballot mailing early December will include a fill-in (separate from ballot) for license info (vital statistics) so that all members can be duly recognized in the near future.

Don't know whether two persons make a committee but Bob Ashby, W5HXL, and George Lagaly, W5NTL, will provide a voting slate for Sec/Treas and two Directors for Jan '85 meeting. Our sincere thanks and "kudos" to Bob and George for accepting this post. Note: A "Debate" is not included in the plan.

HARMONICS

Note to Dan Engle, W5NDH: Via grapevine we have info that you have completed/maybe still in the works, a considerable building project at your QTH. We have certainly missed you at Quarterly Meetings and Sunday "On-Air-Meetings". Can we help to get you back on the air? How about a blurb for the next C&E of your project and "Shack-Fax"as appropriate.

Club
NEWS

Minutes of October Meeting

Meeting was called to order by President Jerry, KD5IS, at 10:06 A.M. with ten members present.

Ellard, W5KE, gave the Treasurer's report.

Pat Sherrill, N5PS, was approved to serve as club station, W5LOW, trustee, replacing Ken Ford, WB5KHU, who has been our faithful trustee and is now in vigorous pursuit of his law career.

The donut committee reported a successful search for a new donut source.

Motion passed that our Christmas meeting will be 7:30 P.M. on December 15 at the Red Cross building. It will be a dessert/snack social. Members will be prepared to make cash donations for a charity contribution rather than exchange gifts. Charlie, WA5JGU's arm will be twisted to provide punch.

The Club will make arrangements to reserve the North shelter at Will Rogers Park for Saturday, November 10, at 6:00 P.M. All amateurs will be invited to come, bring eats and drinks and share in the fellowship and cookfire (to be provided). Because the park reservation cannot be confirmed before this material is typed, listen to the area repeaters for confirmation.

Antenna work was discussed. Some preparations for materials need to be made before the actual installation of the new HF beam can begin. Jerry, KD5IS, Steve, W5VCJ, and Joe, K5JB, will check junque boxes for mast materials.

Ellard gave the CORA report.

Charlie, WA5JGU, will continue to be the official "gin pole keeper".

Meeting ajourned 11:00 A.M. Joe, K5JB, Sec'y

LET'S HAVE A COOKOUT!

++
+ +
+ NOTICE +
+ +
+ All amateurs and their families are +
+ invited to a COOKOUT at Will Rogers +
+ Park North Shelter Saturday, Nov. 10 +
+ at 6:00 P.M. Bring own chow & drinks. +
+ Fire will be provided. Check area +
+ repeaters for updates or confirmation +
+ announcements. See you there! +
+ (CONFIRMED 10/22 - KB5TB) +
++

Antenna Reflections

Recently while doing some house cleaning I started browsing through some things that had been collected at Hamfests. What caught my interest was copies of the transparencies used during a program presented by Chuck Vandament, ex W5ENS, who was working for Collins Comm. Systems Div., Rockwell International, in Dallas. A few years ago he gave a talk at the Texoma hamfest that consisted of three interrelated subjects rolled into one talk: Antenna Gain, Radiation Patterns, and Feedline Reflections.

At the time of that talk I considered myself pretty well read on the subject of antennas but some things Chuck covered were an absolute revelation to me, in fact, I don't think I have since run into such an interesting collection of antenna information.

The most interesting revelation was the lack of significant effect from anomolies in the ground plane beneath an HF antenna; anomolies such as hilly terrain and nearby power wiring, including that inside a residence.

With the help of a computer, he had simulated the effect of resonant dipoles scattered throughout the antenna field and examined the results on the radiation pattern. The effects were insignifant.

He developed his talk by explaining the model used for calculating the vertical radiation patterns of an antenna over a reflecting ground plane. It was the first time I had heard the term "Fresnel" spoken and I thought it peculiar that an expert would mis-pronounce it "Fraw-nell'", until I happened onto the word, with pronounciation, in the Bell Telephone Labs Book, Transmission Systems for Communications.

I presume Fresnel was an experimenter who explored the effect of interference caused by light waves travelling over varying paths, causing cancellation and reinforcement as the different rays varied in phase. When the phase of one ray is different from another by an odd multiple of a half wavelength, they tend to cancel. When their difference is multiples of a wavelength, they reinforce each other. When a radio wave grazes a reflecting plane, such as the earth, it does a 180 degree phase reversal, the same as shifting phase a half wavelength. Figure 1 is a simplified version of one of Mr. Vandament's illustrations. It shows a condition where the direct ray and the reflected ray reinforce each other because the extra length, or phase delay, of the reflected ray is further offset by the reflection from the ground. In the vertical angle shown, the two waves are in phase and cause reinforcement.

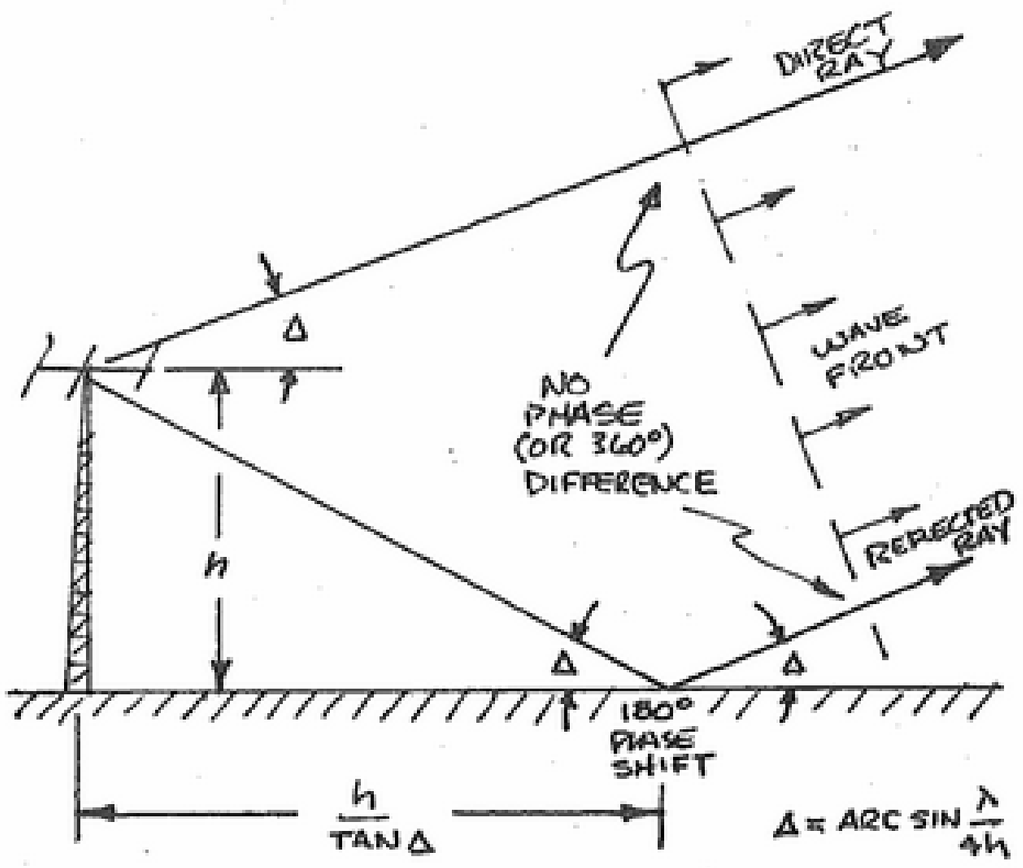

Figure 1. Phase Reinforcement

The first Fresnel zone is that area on the ground from where reflected rays will have a relative phase angle of within plus or minus 180 degrees of the direct ray. Figure 2 shows what the first Fresnel zone looks like from an oblique perspective. The phase of all reflections within this zone are within 180 degrees of the phase of the reference ray. Figures 3 and 4 show the near and far edges of

the first Fresnel zone. Direct rays and rays reflected from this first Fresnel zone are the ones that combine to make the major lobe that is shown on vertical radiation plots of antenna patterns. The nulls result from rays reflecting from the near and far edges as shown in figures 3 and 4 cancelling the direct ray. The effect of reinforcement, if earth were a perfect reflector, would be 3 dB gain over that of the antenna somehow fastened out in free space.

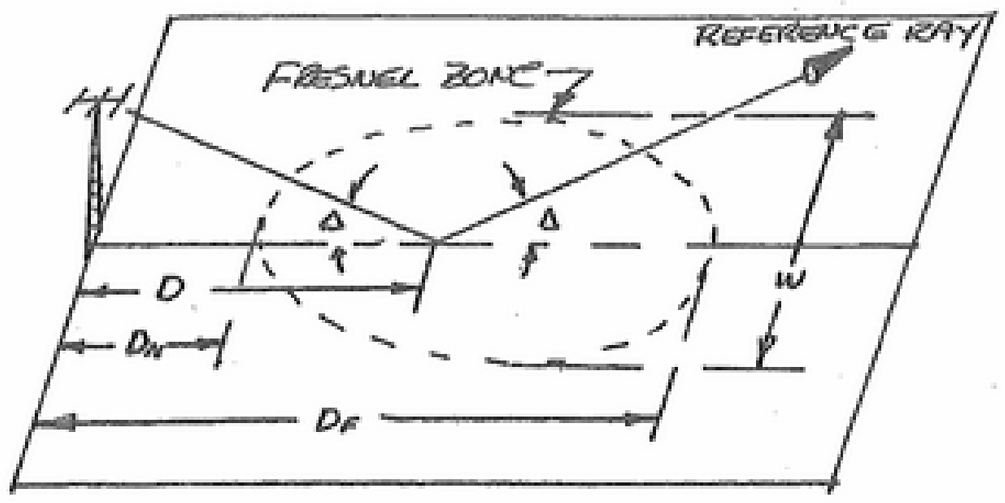

Figure 2. Fresnel Zone

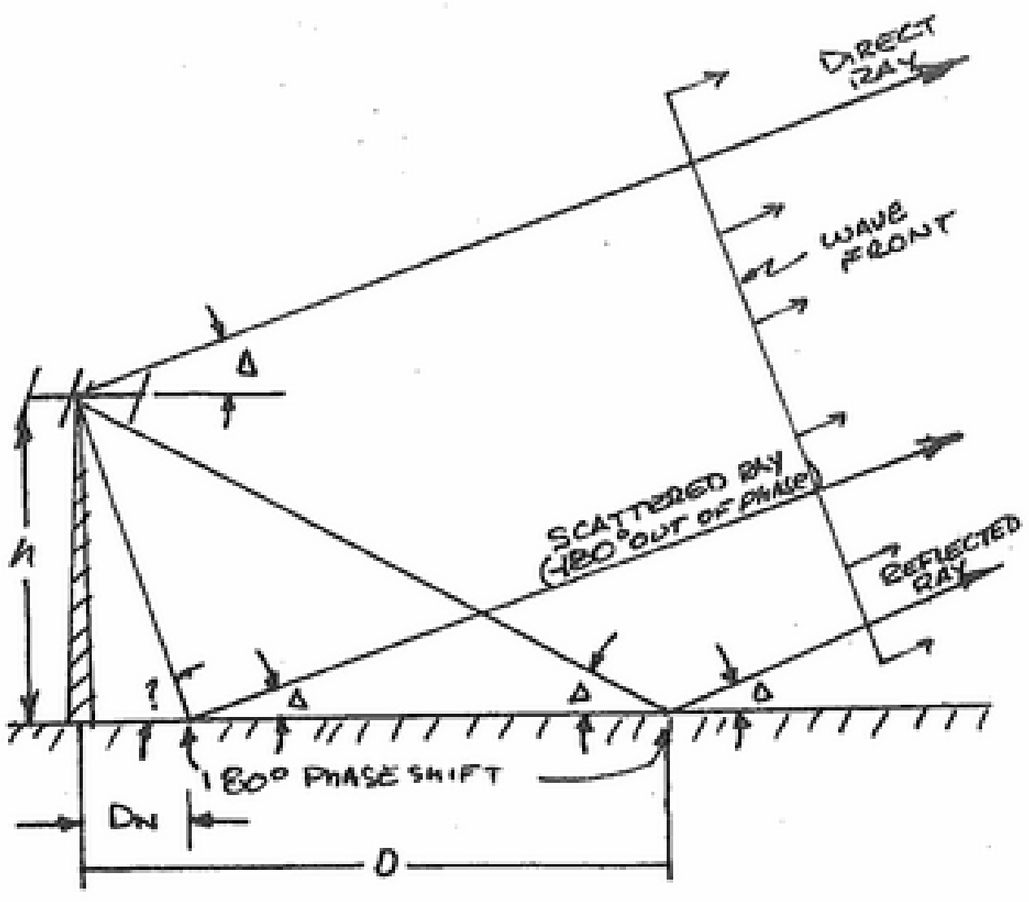

Figure 3. Near Edge of First Fresnel Zone

For you computerists, the equations which define the near and far edges of the first Fresnel zone are:

$$D_N = \frac{h}{\tan\Delta}\left(3 - \frac{2\sqrt{2}}{\cos\Delta}\right)$$

for the near edge, and

$$D_F = \frac{h}{\tan\Delta}\left(3 + \frac{2\sqrt{2}}{\cos\Delta}\right)$$

for the far edge.

If you want to put your computers to work and do an interesting antenna reflector design, scale the frequency up to VHF or higher and calculate the dimensions of a reflector for which the entire surface would be in the center of the first Fresnel zone. There would be only one major lobe and the reflector should look like a parabola.

The minor lobes of an antenna are caused by rays reflected from the second and higher order Fresnel zones combining with the direct ray. The significant thing that Mr. Vandament discovered with his computer simulations was that the surface of the earth making up the frenel zone did not have to be particularlly smooth. For example, a 10 meter beam on a 70 ft. tower would have a Fresnel zone extending from approximately 87 feet to 1600 feet from the base of the tower. In the range of 87 to 320 feet from the base of the tower the earth surface could have a roughness of plus or minus 18 feet! It gets wilder as we move out. From 320 feet to 960 feet, the roughness can be plus or minus 35 feet, and from 960 to 1600 feet the roughness can be plus or minus 70 feet. Well, so much for my concept of the reflecting ground screen!

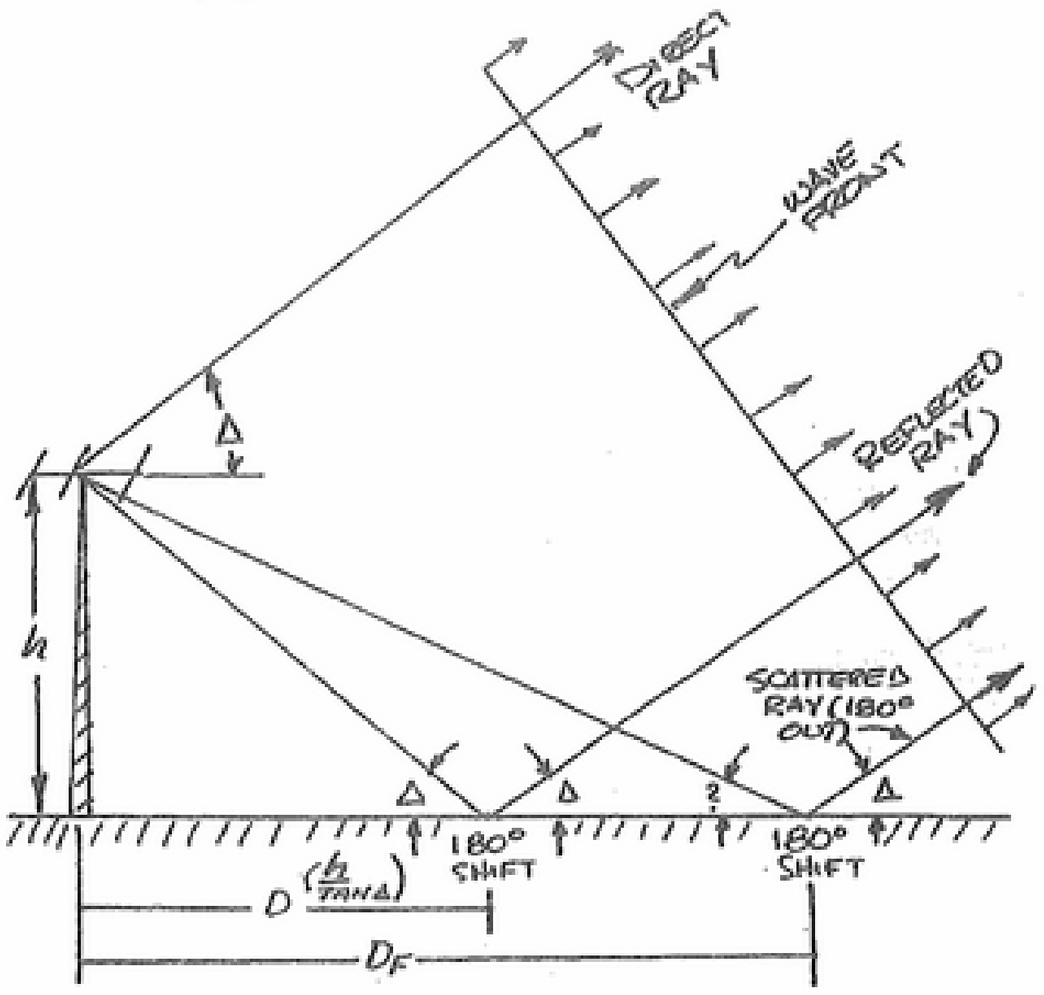

Figure 4. Far Edge of First Fresnel Zone

Another interesting observation was that a power line in the near field would have less than 0.5 dB effect on the pattern of an antenna. He said that the possible noise pickup would be of much more significant concern.

Hmm, well, I wonder what else is lurking in this stuff i Have collected at the hamfests...Joe, K5JB

Call for Authors

It has been many months since I have issued a plea for you who have the ideas to get them published in the Collector and Emitter and become rich and famous, er, well, famous anyway. Just because all you have been seeing in this column lately has been my drivel doesn't mean that I wouldn't be pretty excited to have some contributions from you out there in radio land.

In the past I have received finished articles, pencil notes, verbal suggestions and all manner of forms in between and was tickled to get them. Nothing pleases me more than helping someone else get his ideas into print. We have even had a bunch of fun trying to get the stuff transmitted electronically a few times via telephone modem and radio modem. The slickest I ever saw was when Jim, KB5XN, sent me his club's material via packet radio. It was in all upper case so I had to spend a few minutes on the word processor but that was fun too.

Now I am not advocating that you go out and get a packet radio modem, or telephone modem, or even a computer to get your stuff together for the C&E, but if you need an excuse, go ahead and do it! I could even be talked into hooking the TU up to the two meter rig (or any of the other rigs, for that matter) for some rawboned BAUDOT if that is what you would like to try.

More important, don't forget that this magazine is your magazine and I am only one of your editors. My interests tend to be technical and I realize that a lot of you aren't particularlly interested in that area. If you want your peers to be informed about DX, contests, traffic handling, knitting, fishing or photography, feed me the stuff and we will get it printed. Joe, K5JB

FOR SALE: Disposing of all my transmitting and receiving tubes as one lot. Many new in cartons. Call Steve, W5VCJ, 341-8486

Salem

TESTING, TESTING, TEST EQUIPMENT

Expensive test equipment, I don't have. And I need it. Some people like K5JB swings into an Icom 720 armed only with a power supply and lecher wires, I must have at least a scope and a VOM. Also, probably wouldn't hurt to have a signal generator as well as an RF voltmeter.

For years, I had a beat up HP410B RF voltmeter. This was a really nice piece of equipment. It did not win any of the awards for being clean, but after I spent some time waltzing through its innards with changes including some new tubes and a new diode tube, It worked pretty good. It wasn't the mainstay of my test bench, however. That went to a lowly Radio Shack voltmeter that I bought for half price and fixed a meter movement. Actually, the price might have been less than half price because I remember that I still paid less than half price for the meter.

I eventually got a scope in the flea market at Dayton. Had to scrape all the spare cash I had and sell my HT-100, but the scope was (you guessed it) half price of new. Worked great. Still works great and it is probably now about 8 or 9 years old. Still a great piece of test equipment.

A good friend of mine designed a signal source for use on 2 meters by placing an international crystal oscillator inside a piece of drain gutter along with a little loop. This was just a simple version of the waveguide below cutoff attenuator used in the more expensive signal generators. Worked very well. I, however, had a regular Model 80R Signal Generator made by the Measurements Corp. It was actually a Model 80 and I got a coil that converted the lowest frequency range to cover 400 to 480 Mhz. This was a trick that Joe K5HMD taught me. I used that signal generator to tune up countless HT radios and to retune mine all the time. It worked well on both VHF and UHF provided it got about an hour head start on warming up. It was really a good piece of equipment to use with its calibrated output.

Some of the guys around here have actually acquired service monitors. I mean like the really expensive four to five thousand and even more transmit and receive checkeruppers. That is the price of half a car. I would like to have one, but don't think that I can really justify that. Well, anyway, I do have to make do with what I have. I didn't check modulation with a lot of equipment, I would just turn up the deviation until it sounded like the deviation of another radio with known modulation characteristics. That was pretty unscientific, but it would usually work until I could get to the local deviation monitor.

When the Bearcat 250 came out, I looked at it for awhile before I finally scraped up money by selling present stock out of the junk room to buy one. This was a quantum leap for test equipment. Now I could set frequency on the radio by tuning the 250 up about 10.7 Mhz above the frequency that I wanted and using the radiation from the local oscillator to set the frequency, right on. This was neat. Still my modulation deviation measurements were still in the dark ages. I had conquered transmitter frequency setting by the purchase of a Monsanto Frequency Counter. It actually solves most frequency measurement up to 12 Ghz or so. It is a sort of an old relic, but reliable. A recent short in the transformer makes it a little sensitive what with leakage or whatnot.

The Bearcat 250 can also do duty for the frequency deviation modulation measurements so I decided to see how consistent it is. I had wanted to check the deviation on my IC-230 with the packet radio setup. K5JB had been complaining that it sounded a little puny. He also suggested that part of the problem that I might have been having with the path between my house might have been a little disparity between my high tone and low tone and that I probably needed to touch up the frequency equalization. I had known that the IC-230 was notorious for poor frequency response and the fault was a small capacitor in the mike circuit. I had removed it a long time ago and replaced it with one that was ten time larger. Still, I thought that I might check it out.

I didn't have a deviation meter. But the Bearcat could be a good substitute if it was consistent and repeatable from the bottom to the top of its range. I had access to a service monitor and I ran deviation checks from 1.0 Khz to 5.0 khz. From the lowest frequency to the highest frequency, I found that the Bearcat pretty consistently produced a voltage at the top of the volume control that was proportional to the deviation. The results were:

Deviation	$PP_{Voltage}$
1.0 Khz	.27 Volts
2.0 Khz	.50
3.0 Khz	.75
4.0 Khz	.96
5.0 Khz	1.11 Volts

There appeared to be some compression at the top end because of the narrow bandwidth of the Bearcat. I measured at the top of the volume control because I wanted the signal to be independent of the volume setting. This is not exactly true if the volume control is almost all the way up because the center wiper pulls the voltage down. So, it is best to leave the volume control not more than half way up. I measured these voltages with a scope and they are peak to peak. I found that they were pretty consistent. Looking at the numbers mean that if I set a radio with deviation of about 1.0 volts at the volume control, then I am probably well within the category for proper deviation. I found that the numbers listed above were pretty much independent of frequency. This should not be any surprize really since the radio uses the same circuit for detection for all the various bands. I haven't checked any other bearcats, but I would assume that they would be consistent. If you use a scope, you will probably get consistent results to what I did. If you use a meter, then you might have to get into all that claptrap about meter inertia, so I suggest that you use a scope if you can.

So now, I can add a modulation monitor to the many uses of the Bearcat 250. I also checked the quadrature detector and found that it produces a 3.0 volt output for a zero input (frequency error) signal. The Bearcat manual indicates that this voltage varies up and down for on frequency or off frequency signals at a rate of about .18 volt/khz. A signal 2.0 khz high should be about 3.36 volts. You could probably use a digital voltmeter. The point is pin 2 of the flexible strip to the control board which goes to the junction of a 100K and 330K resistor. This voltage feeds a comparator input to turn the radio off for an off frequency radio.

Try the Bearcat for a quick deviation check. Hey, by the way, who is the turkey who borrowed my manual for the Bearcat 210? Bring it back. I think it has been gone for about a year. OK? I grant an amnesty.

Micheal Salem N5MS

MY OH MY, IT'S MIDCON (BIG D DEPARTMENT)

I am always a sucker for an electronics show. Ham or what not, it is alway interesting to go. And if it is Dayton, well, that is the reason God made April so we could have a last weekend for the Big Show (make that reeealy big shew). And when Dayton is not on tap, well, just have to make do with whatever comes along.

So I had some interest when Roger WA5JXX asked me if I was interested in the Midcon/84 Electronic Show and Convention in Dallas on the week of the 10th of September. I had been before, but it was many years ago and since they alternate the shows between Dallas and Chicago, I only have a practical window that opens for me to go every other year. Things have really been busy and this looked like a way to take a break and catch up on some electronic education that was badly needed. I was busy on Monday the 10th and couldn't get back for the trip, so Roger suggested Wednesday. The calendar at the office made that difficult, so we compromised on Thursday, the last day of the show. Transportation was easy. We rolled out the airplane. I kind of wondered about the weather, but it looked like it would be OK. Earlier this year, about two months ago, we had a failure in the two Nav VORs. One was not receiving anything and the other one seemed to have a bum decoder piece. I didn't really worry about that since both of the Coms in the airplane were working fine and I could receive the ATIS on the working Nav receiver and, well, I haven't really used the VOR's for a trip to Dallas for some time. This was a small problem that was easily fixed.

The Midcon/84 Electronic Show and Convention is sponsored by Regions Four and Five of the Institute of Electrical and Electronic Engineers (IEEE). It is also sponsored by the Central U.S. Council, The Southwest and Chicagoland Chapters of the Electronic Representatives Association. Combined with Midcon is Mini/Micro Southwest, a smaller portion of the Show that concentrates on Industrial and other commercial use of Microcomputers and Minicomputers. Special sections of the Mini/Micro focused on various bus designs and operating systems including VMEbus and Multibus and the UNIX operating system.

The show is very similiar to Dayton (no fleamarket however, drat it), and besides there are numerous technical presentations that are very interesting. I managed to run through the monographs that they had for sale and picked up a couple that looked particular interesting including "Protecting and Exploiting Technology in the U.S. and Abroad" and "Financing Technology Companies from Start-Up to Public Offerings." It is always interesting to see what's being done in the venture field. Exploiting technology is an interesting paper since it presents many of the basic ways that you can protect (and lose) inventions. One of the sessions was devoted to voice synthesize and speech recognition. This is becoming a very important technology. Just imagine your tappen oven talking to you and helping that casserole along to the height of culinary perfection. The great thing about it is that machines can listen to you when you talk back to them and they do pay attention. At least they try. Which is more than I can say for some people. Voice recognition is just another way of making some of the new fangled machines user friendly.

After deciding to take the small bug crusher to Dallas, Roger made some contingency plans with a commercial airline reservation in case the weather turned sour. I told him that he was on his own from this point since I could not validate any Advantage miles for him. These are the sacrifices we make for efficient travel. Roger is trying to build up his miles so he can get a complimentary trip to lower slobovia or whereever American flies that's cold. I don't quite understand all of it, and I have to say that Roger got me signed up, but even though I took a trip to New York and to Denver, I have yet to get credit for anything other than an extra package of peanuts from the stewardess.

We decided to leave early. I said the crack of mid-morning, but Roger wanted to leave about 7:30 a.m. I compromised by stopping by the Doughnut Stop on the way to the airport and picked up a coffee to go and some doughnuts. After walking around the plane, it was time to hitch up and go. Nothing remarkable about the trip. Love is a little busier during the week than on Saturday when I usually travel down for the sidewalk sale, but we got lucky and sounded official enough so that they put us in almost as soon as we got there. I waved to the King Air that had to do a go around while I was putting it on the runway. I later heard the Tower tell him to enter a left downwind to land on 180 and he really didn't waste any time. I did scoot off the runway at the first turn off because of some MU-2 hanging off my tail.

After parking the plane and buying some gas, we begin to look around for some transportation. Roger had suggested taking the bus and that was fine with me since we were not in any hurry. It was pretty neat to find that busses come by about every 20 minutes right outside the FBO on Lemmon Blvd. By the time we hiked out to the road and found the bus stop, here comes the bus. I am not a big city traveler. In fact, when I went to New York, I walked virtually everwhere I went and when I wanted to get there faster, I leanned to whistle for a cab. You can ride virtually everywhere you want to go in the Big Apple for about a 3 or 4 dollar cab ride, but this is not true in wide open Dallas. Last time we took a cab from Love to the Hamcom location seemed like the talley was over $10.00 or so. Not too bad, but we were in a hurry.

Midcon was at the Dallas Convention Center. I don't think they got out all the Elephant debris and droppings from the previous convention. Carrying Walkie Talkies and I think that Roger and myself looked like lost Secret Servicemen. However, the giveaway was that we were not wearing Rolex watches.

The last time I went, they let you carry shopping bags to pick up the literature that was stacked up on the tables. Unfortunately, some people took advantage of the shopping bags to rake off samples and specimens off the table into the bag. The problem is that the vendors started to get upset. So to keep down the antisocial behavior, the Midcon powers that be decreed no shopping bags whatsoever. This cut down on the literature grab also since it didn't take many walks past the exhibits to gather up data books and information. In fact, it was impossible. This did have two advantages since it made sure that you didn't pick up something unless you were interested in it and each of the manufacturers were more than willing to take your convention badge and run it through a credit card machine which they would use to generate a mailing list to mail requested literature. I am basically into instant gratification where the literature is concerned, but I did exercise some judgment about what I brought home. I just didn't want to carry it. Later, at one of the booths, Roger met some friend and chatting with him for awhile, I

asked him if it was OK if we dumped some of our information at their boothfor later pickup? Sure, go ahead. So the paper picking habits increased a little and I made a trip or two back to Hamilton Avnet to drop off more items. The stack was not all that tall by the end of the day, but Roger and I did borrow some boxes from one of the computer magazine people to put the materials in when we left. It was kind of tough getting past the lady guard at the door who told us that we would need a slip to get out with the boxes. I told her that it was really no problem and that if she just wanted to take a minute that she could readily see that I had nothing up my sleeve, literaturewise, that constituted contraband. I guess that she was busier than I thought because she said , well, no, she didn't really want to look, just let us know that we would need a slip to get out. Well, no one was there and after searching for awhile, we just walked out. We walked back in and nothing was said, so we walked back out.

Walking around the exhibits was interesting. One of the more impressive displays was a small flourescent display built onto a chip the size of a 2716. This display was showing a television picture that was so tiny that it took a magnifying glass to get any real resolution. The movie was "Star Wars" and that was appropriate considering the starwars technology that was present. I think that I could get a headache watching too much TV like that.

I saw a bunch of familiar companies including SGS-ATES which was offering copies of their data books. They make the basic garden variety of CMOS and some specialized and interesting audio, radio and TV circuits. These are contained in a separate data book . These two books were well worth the price (basically free). My old friends Mitel were there with a couple of new tone decoders including a single chip DTMF decoder that is designated the MT8870 Integrated DTMF Receiver. This combines Mitel's previous technology in its earlier two chip sets for tone decoding. This looks like its specifications are a little better than the old chips. About $13. 00 per 100.

Sprague is a name well know for capacitors, but not many people realize that Sprague also makes a variety of Integrated Circuits that include interface drivers, audio amplifiers, video and television Integrated circuits. This is really a neat book and I have one of the few copies. They didn't really have very many to pass out on the last day. Another company that had some neat IC's was Ferranti. They had a whole host of A/D and D/A converters. and voltage references. Some of the more interesting were the line powered microphone amplifier IC's used for telephone operation in case you want to hook that dynamic microphone up to the telephone hybrid. Another group of chips of interest included the one chip AM radio IC, IC photo switches and some pulse width modulator IC's for switching power supply, temperature control and others. That should keep em busy for awhile , anyway.

I found a company that had some MOV's. (Metallic Oxide Varistors) used to suppress transient outbreaks from mother nature. More data sheets. Saxton Wire and Cable was there, they gave practically everything and everyone a fine plastic ring binger to put information in. Looked good. To me,, everybody seems to have something that they were giving away and for the most part of it, I was careful to take no more than I could carry under the no bag rule. Let them mail the stuff later.

Sprague also had some really nice and tiny trimmers. They only had one moving part since the capacitor had one plate deposited on a substrate. Next the other plate of the capacitor is connect through a tiny washer and some insulation. It looks simple and since the top plate was in the form of a butterfly and moved over the bottom two electrodes as it turned, the change in capacitance was related to the movement of the plate and was completed from minimum to maximum in only 90° instead of 180. It is kind of like a gimmick capacitor.

Ovenaire-Audio-Carpenter makes crystal oven time bases and they were passing out complete engineering catalogs for most of their oscillators. I am not sure if I got one the last time I was there, so I made sure I picked one up this time, since a lot of equipment that is coming on the surplus market has these older type time bases. I have a frequency counter that uses them.

Murata makes IF filters and components. I got one of their catalogs in case I run up against something in a radio of unknown IF vintage. They have also expanded into ceramics for microwave applications. The use of ceramics as microwave resonators means high q circuits (up to 6000 at 7 Ghz) and can be trimmed fairly readily. The tuned circuit is nothing more than a piece of ceramic that sits on the PC card.

Several of the custom PC houses were there. Also the boys that can produce a million PC cards. I kind of find it hard to believe that somebody can make a living out of one or two board PC protos, but after checking the prices for this work I can understand. A fairly complicated board with multilayer circuit design can run to about a K with plated through and mask and all the other things. I guess that is not really that expensive, but it is more than I have ever paid. Multilayer PC cards are really pretty interesting. I can remember spending hours over a printed circuit layout to get it just right. Now a computer will spend hours routing and designing the card with the new software and graphics. And by laminating smaller and thinner card stock, you can produce a multilayer board for the more complicated circuits. I don't think that I will ever do this, but it is an interesting technology.

Motorola was there from the semiconductor division. I picked up a data sheet for their new voice processor. It uses LPC format (same as Texas Instruments) and is a single chip with ROM and synthesizer built-in. It is a simple way to get speech . The chip will work with external memory also, but the onboard 4K Rom will hold about 14 to 28 seconds of speech. The 40 pin chip is an NMOS LSI and is the Motorola MC 6187. They really only had a single page data sheet. Motorola also had some books that describe some of their switched capacitor filters and new telephone chips.

Globe was there with battery information and a nice little charger handbook for their GelCel batteries. I also picked up some data from Microtran for their telephone coupling transformers. I think the electronic hybrids may make the transformer technology a thing of the past.

We finished up about 4:30 p. m. just in time to get caught in the rush traffic back to the airport. The weather was hot and hadn't changed and the trip back was uneventful. Good show. Next year, it will probably be in Chicago, so it might be two years before I am back in Big D for Midcon.

Micheal Salem N5MS

Edmond Amateur Radio Club
P.O. Box 76252 / Okla. City, Ok. 73147

FIRST VOLUNTEER EXAMINATIONS

The Volunteer Examiner program seems to be underway in the State of Oklahoma. A group of amateurs have announced volunteer examinations to be held January 22, 1985 in Okmulgee. The examination system officially began there October 24th.

According to Charlie Cowden, W5GA in Okmulgee, the newly-formed Okmulgee County Amateur Radio Association will administer exams on the fourth Tuesday of every month, beginning after the first of next year. Exams will not be given in the month of December due to the Christmas holiday season.

Cowden is joined by Tolen Parker, AE5Z and Bill Malicoat, NI5Y to form the three-person volunteer examiner (VE) team. The team lives in Okmulgee and Henryetta. All are retired. Cowden gives credit to Bill, NI5Y for spearheading this pioneering effort.

Exams for all classes of license will be given by the group. The new FCC Rules for Volunteer Examinations provide for three Extra class operators to give exams for all classes. The examiner board has been certified by W5YI, one of the official Volunteer Examiner Coordinators (VEC) for the Fifth Call Area.

At the time of this writing, plans are to administer the examinations from 2 p-m until 5 p-m on each fourth Tuesday. Examinations are to be held at the OSU School of Technical Training (formerly known as Okmulgee State Tech.). The official Oklahoma state road map shows Okmulgee to be 103 miles from Oklahoma City and 38 miles from Tulsa.

No announcement was made regarding reimbursement of test expenses, which has been allowed under FCC testing procedure with the Volunteer Examiners.

Cowden stated that FCC-610 forms will be available on-site for completion. The group would like to be advised "a day or two ahead" of the examination day in order to plan proper materials and scheduling.

CW tests will be given, with the applicant having a choice of a multiple choice test or a one minute continuous copy requirement to pass. All written tests will be of the multiple choice type, said Cowden.

It is suggested that interested parties contact one of the examiners for any additional information or any changes in plans. DO NOT SIMPLY SHOW-UP IN OKMULGEE ON JANUARY 22. Give the examiners the courtesy they deserve in tackling this task. Make arrangements ahead of time. Check next month's C&E for additional information.

The examiners are usually monitoring the new 147.225/.825 W5GA Repeater in Okmulgee and will be glad to answer any questions about the new procedure. The machine is accessible from the Oklahoma City area with a good antenna, and Charlie, W5GA appears on MORI's 146.07/.67 and EARC's 147.63/.03 repeaters in Oklahoma City from time to time.

Contact may be made by telephone at the following numbers:

W5GA	Charlie Cowden	Okmulgee	(918) 756-2867
AE5Z	Tolen Parker	Okmulgee	(918) 756-3025
NI5Y	Bill Malicoat	Henryetta	(918) 652-4936

OCTOBER DINNER MEETING

EARC's October Dinner Meeting was held at Crystal's on Northwest Highway on October 8th. Club members and families munched on pizza, spaghetti, salad, and other goodies at the family-time restaurant.

The highlight of the evening was the appearance of Ron Bragg, WB5HST of nearby Yukon, who finally made it to a meeting for a change. Since Ron lives only a few miles from the meeting site, he would've never lived down the wrath of the membership if he hadn't shown. We also hope that wife Vivian, WB5HSS had some influence on him also. Vivian never gets Ron to take her to dinner, and the opportunity to threaten him with the rest of the club must've been too much on Ron. Bragg received a standing ovation for his appearance.

Bob Robert, WA5BQX and Denny Orcutt spent quite a bit of time and money in the game area, stashing away winning tokens to trade for prizes. Bob won a couple of cute stuffed animals for his efforts, and only spent $90 doing it.....whatta deal!

Dennis, WB5ISN proved his climbing ability by scaling a dinner table. Aaron VanNort, WB5UIY's harmonic, decided to climb over the second story rail near Dennis' table on the first floor. Dennis looked up just in time to see Aaron on the rail. In a flash, Dennis was on the table under Aaron. Quick thinking and a warning to Aaron kept him upstairs. WHEW! It all happened so fast, most didn't see anything but Dennis climbing the table. We all thought it was just "party-time Dennis" for a minute.

The dinner meeting was well-attended, and everybody left a little heavier than they entered. Next dinner meeting will be in December.

NOVEMBER IS BUSINESS MEETING MONTH

The last business meeting of the year will be November 12th at KOFM.

The main agenda for the meeting will be the election of officers for 1985. The Nominating Committee has been at work to develop a slate of officers to recommend.

ATTENTION MEMBERS: Don't stay away in droves because it's election night---the Nominating Committee has already approached the candidates for office and all have agreed to fill the positions---so if you haven't been contacted, you are not going to be railroaded into office. According to the Bylaws however, nominations from the floor are to be acknowledged.

Remember: plan to attend the November 12 meeting. Other business will include evaluation of our repeater systems and suggestions by the Trustee of improvements.

A CHANGE IN PHONE NUMBERS

Recent problems on the telephone lines to the 63/03 controller have forced a change in phone numbers. Either a slip in security or a random call has discovered our controller. Through playing around, the caller or callers have made the controller do some unauthorized things. There was no choice but to change the phone number for security reasons. Please contact Dennis to obtain the new number.

A WORD ABOUT MEMBERSHIP

From time to time there are questions as to how an amateur can join EARC. Since the incorporation of the club in 1975, membership has been limited. Under current Bylaws, membership is by invitation of the Membership Committee, who have acted upon a nomination by a member in good standing. There is also a finite number of members who may have equal privileges on the repeater controller, and that number must not be exceeded.

All of this can be interpreted in many ways, but the fact is that control is desired in the growth of the club. It is hoped that the amateur community will see the reasoning behind this effort and

NEXT PAGE

The South Canadian Amateur Radio Society

SCARS OCTOBER MEETING.....

The South Canadian Amateur Radio Society held its regular monthly meeting on October 12th at the Red Cross Building in Norman. Much discussion was devoted to possible action on the repeater problems. Outside interference as well as internal machine problems have caused the repeater to become less reliable during the past few months.

President Bob Rabin, KA5MIZ, asked for volunteers for two projects. First, a committee is needed to make plans and arrangements for the annual club Christmas dinner. The dinner is usually held either the first or second Friday evening in December, so plans need to be made soon. Also, election of officers for 1985 will be held in the near future, and a nominating committee will need to be formed. If anyone is interested in serving on either of these projects, please get in touch with Bob or one of the other club officers.

VOLUNTEER EXAMINER PROGRAM.....

Since writing the piece on the Volunteer Examiner program for last month's C & E, I have acquired a few more facts. Herb, N5ND, sent a copy of a list that he received from the ARRL. The list includes all of the accredited VEs in Oklahoma. As indicated in Herb's letter, there are only four VEs within a twenty mile radius of Oklahoma City. If the radius is expanded to forty miles, only three more are added. Of the seven, only four are holders of Extra Class tickets. Considering the high number of exams given in the area during the past few years, it would appear that the number of examiners is totally inadequate.

If the goal of plentiful exam sessions is to be reached, there will have to be a vast increase in the number of Volunteer Examiners. The ARRL procedure for becoming accredited appears at first to be tedious, however the League feels that the method is necessary to insure a quality program. Regardless, as the ARRL is the only VEC active in Oklahoma, the only way to make the VE program a success in central Oklahoma is for as many persons as possible to pitch in and become qualified. Please write to ARRL for details. Also, see N5ND's note below this story.

-wa5rpp-

VOLUNTEER EXAMINERS
BADLY NEEDED

If you have an Extra or Advanced license, and can devote a little time to helping your fellow hams and would be hams, PLEASE obtain volunteer examiner materials from ARRL and qualify as a VE. As of mid-October, there were only four qualified VE's in the Oklahoma City area, including Norman and Edmond. Many more , especially Extras, are needed if we are to have a meaningful schedule of exams in this area. In fact, at least several more VE's are probably needed in order to have any exams here at all. N5ND

understand it. MORE EDMOND CLUBS

EARC strives to provide quality communications facilities to the benefit of amateur radio. The Teleconference Radio Net is an example of our effort to provide these facilities. Our repeater systems are available to use, and though activity is not actively solicited, it is not discouraged as long as the system is not abused.

It is hoped that with this statement some questions are answered and myths put to rest. Any misinterpretation in the past is regretted.

DECEMBER IS TELECONFERENCE NET MONTH

"Packet Radio Overview and Perspective" will be the subject of the December 2nd North American Teleconference Radio Net (TRN). The net will be held on Sunday night this session, which is a break from normal. The net will be held at 7:30 p-m on the 147.63/.03 WD5AII repeater in Oklahoma City, sponsored by the Edmond Amateur Radio Club, Inc.

On September 15, 1984, the Midway Amateur Radio Club of Kearney, Nebraska, under the direction of its President "Mert" Feikert WBØUSW, took over sponsorship of the TRN. Mert announced that Timothy Lowenstein WAØIVW will be the new Net Manager.

TRN links together over 150 gateway stations (mostly VHF/UHF repeaters) across the U.S. and Canada to present high quality technical and informational programs of interest to radio amateurs. When available for uplinking from the U.S., the OSCAR 10 satellite also transmits the net to one-third of the earth's hemisphere. It is estimated that a single TRN has had as many as seventy-five thousand amateurs tuned-in, plus uncounted scanner listeners. Past speakers on TRN have included the late Vic Clark W4KFC, and Senator Barry Goldwater K7UGA. A fact not generally realized is that the technology behind TRN allows any of the amateurs tuned in, whether in Alaska, Florida or New Brunswick, in their car, home or walking down the street with a hand-held radio, to talk to each other or to the featured speaker.

TRN is "amateurs learning to serve". The featured speakers provide to amateurs state-of-the-art information to inform and to inspire. While behind the scenes, amateurs perfect their skills to provide ad hoc radio/interconnect networks to serve the public in times of emergency or disaster.

The idea of TRN began with the work of Ed Piller W2KPQ and Charlie Kosman WB2NQV. In the early 80's, Ed and Charlie began linking repeaters by telephone to provide technical presentations to amateurs as a joint project of the Long Island Mobile Amateur Radio Corps and the Long Island Chapter of IEEE. However, with the telephone bridging equipment readily available to them, it was difficult to provide high quality audio to and from all participating repeaters. In late 1982, Rick Whiting WØTN, a telecommunications engineer with extensive background in developing teleconference capabilities for Honeywell, and an early participant in the IEEE/LIMARC technical nets, became net manager. Rick made arrangements with Lou Appel KØIUQ of Darome, Inc., to use Darome's highly sophisticated multi-point teleconference bridges to provide the "land-line" links for repeaters (note that many of the repeaters are, in turn, linked by radio). The result was superb audio quality and a rapid growth in the number and distribution of gateway stations in the net. Lou will continue to be the bridge engineer behind the scenes in TRNs under the new net manager.

The pre-net audio (approx. 7:15 p-m) on many TRNs has been interviews conducted by Steve Bauer KCØHF, a highly talented and dedicated ham in Wichita, KS. A highlight of Steve's pre-net programs was his interview with astronaut Owen Garriot W5LFL,

CONTINUED ON NEXT PAGE

ALTUS AREA AMATEUR RADIO ASSOCIATION

(EDITORS NOTE: The following was mailed on September 17 and received September 26. US Mule.)

The Altus Area Amateur Radio Association recently held its seventh annual HAMFEAST and first annual CAMPOUT at pavilion #1 at Quartz Mountain State Park near Lone Wolf, Oklahoma.

The campout was attended by two families: Loren and Janice (WA5CBF/WB5WMN) Simms and Chris Simms, Mr. and Mrs. Sherwood Harris (WA5TXG). The weather in southwestern Oklahoma did not cooperate as usual as we did have high winds and lots of blowing dust the evening of the seventh of September. Sherwood brought his telescope and set it up for all to view the planets Mars, Jupiter with it's 4 visible moons , a binary star, and the good old moon. The viewing of the moon, planets, and stars would have been a lot better if there was not so much wind and dust. We spent Friday night parked at the paved camping areas (where all the hook-ups are) about a ¼ mile from the store.

We cleaned up the pavilion about 9:00 am preparing for the hoped for crowd to start showing up. We expected and had prepared for at least 80 show up for the Hamfeast. By 11:30 we had only 15 people show up- at least we had plenty of food to go around. The club secretary had sent out 83 notices and it was sort of a disappointment to see so few show up.

Paul McEndree , WB5BBO, was the one who performed the magic needed of turning the hamburger meat into a tasty treat. He really did a good job this year cooking! A great big THANK YOU also goes to Deanna, WB5UMH, for all the running, going, baking, buying, preparing for this Hamfeast. Both Paul and Deanna deserve a round of Thank you's for all of their work in making the Hamfeast a success.

Since the Hamfeast was one week before the regularly scheduled club meeting, we decided to call off the regular September 13 meeting until next month.

The next meeting of the A.A.A.R.A. is scheduled for October 11, 1984 at 7:30 pm at the North Main Fire Station.

See you there. Loren WA5CBF

GREAT PLAINS A.R.C.

WSHGH Repeater 146. 13/73

(EDITORS NOTE: The following was received two days after the paper went to the printer.)

The Great Plains ARC met on 9-4-84 at the Woodward Maintaince Building with WA5PLW presiding.

The Minutes were read and approved.

The Treasurer's report was made and approved.

The New Report by n5CCV was unfinished,but the checkin count is up.

Michael Bowman reported on the net at 3.740, which meets on Tues,Thurs.,Sat and Sun. at 9 Pm. They had 6 sessions, 47 checkins and 5 routine traffic handled.

Two new calls were announced: KE5RB--Bart and NR5L--Gordon

It was announced that 5 or 6 amateurs were going to OKC in Sept. to upgrade.

Two guests were introduced: David Rogers and KA5FJP,Robert Dye. Both are wanting to upgrade.

NC5C reported giving$20 each to Gary Donnley and Bob Stienley as a good will gesture,for letting us use their mobile homes on field day. It was mentioned that the trailers will be available next year.

The Club discussed becomming a V.E. and decided that we would go with the ARRL. Lee Rogers made that motion and Ka5SDD seconded that motion. It passed.

A report was made on visiting the Wheatstraw group. A fun time was had by all. A report was also made on visiting the Great Salt Plains.

The club discussed posting a reward on stolen amateur radio gear. The consesus was that it would not help.

N5CCV made the motion we send a note of congradulations to Dave Cox of Broken Arrow, our new section manager of the ARRL. KB5RB seconded. Passed.

Novice classes were discussed. Bill Wyatt made the motion that we start the first Tues.in Oct. N5CCV seconded. Passed. N5CCV made the motion that the club buy the books and be reimbursed by the students. KA5SDD seconded. Passed.

KD5JR discussed the radar, weather. Slides to be shown at the next meeting.

A big thank you was given to Gordon,Rhonda, and all the family for the feed, and swim at Mooreland.

KE5RB thanked the club for up grade classes.

The club discussed having an RFI Committee. The consesus was that more information was needed.

adjorned at 9:15

73's K5YZK

MORE EDMOND CLUB

for the March, 1984 TRN.

Located midway between Boston and San Francisco (1,733 miles either way), the Midway Amateur Radio Club is the ongoing host of the Kearney Spring Amateur/Family Convention, held the last weekend of March each year. This event draws amateurs and their families from throughout the midwest. The Midway Amateur Radio Club hosted the Nebraska State ARRL Convention and the 1984 Midwest ARRL Convention.

"Packet Radio Overview and Prospective" will be the subject on the first TRN to be presented under sponsorship of the Midway club, Sunday December 2, 1984, at 6:00 p.m. CST (local nets may begin earlier0. The speakers will be Lyle Johnson WA7GXD and Harold Price NK6K, both highly respected authorities and pioneers in packet radio technology. This net will explain what packet radio is, describe how to get started in it, point out the benefits to you, and outline the pitfalls to be avoided for both the novice and expert alike.

Lyle is President of the Tucson Amateur Packet Radio Society (TAPR) and was the primary developer of the TAPR terminal node controller (TNC) hardware. For his work in developing the TAPR TNC, Lyle was awarded the 1984 Technical Excellence Award at Dayton. Looking to the future, Lyle is responsible for the processor design for the upcoming amateur packet satellite (PACSAT). He became active in packet radio in 1981, the pioneer days for this new technology.

Harold is a Director of TAPR and was on the team that designed the software for the TAPR TNC. He is also the AMSAT Project Manager for PACSAT. Harold is another packet radio pioneer, having first become active in that technology in 1982.

Packet radio offers opportunities for both the traditional communicator and for the experimenter. Learn about packet radio from two of its leading developers by tuning into TRN, Sunday, December 2, 1984, at 6:00 p.m. CST (that's 0000Z). For a complete list of gateway station locations and frequencies write the TRN Manager, c/o Midway Amateur Radio Club, P. O. Box 1231, Kearney, NE 68847-1231 (S.A.S.E. please, Canada excepted) or check the CompuServe "Hamnet" XA4 Database.

EDMOND AMATEUR RADIO SOCIETY 147.735/147.135

Edmond Amateur Radio Society's Repeater:

I would like to take this opportunity to dwell on the club's repeater, KC5GN/RPT, past history and current status.

The repeater was originally built and financed by Martin Vinson, WD5FEI, and operated under his callsign. Martin donated the repeater to the club. The rpt went on the air in June of 1979; my first involvement with the rpt was lending Martin a helping hand, more watching him work than actually helping, in January of 1980. The rpt frequency was 147.72/12. We were receiving at 120 ft and transmitting at 50 ft using Motorola Motrac equipment. The repeater site was on Central State University's Campus at the KCSC transmitter site, look for the 400 foot tower. During April of 1990 Martin and I came up with an autopatch using a homebrew decoder and logic board that I had built. The patch was remote from the repeater sit and linked via the rpt output freq and an UHF link to the rpt; the patch was originally located at Martin's home and latter was moved to my house were it remained for about two years. The rpt evolved to a buss-type control system with lots of plug in circuit cards (all homebrew). I built the diode matrix type CW-IDer; Martin built all the rest of the circuit cards, including: time out, carrier tail, courtesy beep, a new multi-tone (DTMF) decoder, and all new patch control logic. Bill, K5SKA, forked up the money for the fancy DTMF decoder and filter ICs.

Somewhere along the line the repeater changed frequency from 147.72/12 to 147.135/735 because of interference from stations between Edmond and Woodward using the Woodward 72/12. The Woodward repeater wasn't the problem but operators using lots of power (or too much from our perspective) were a nuisance.

A new receiver antenna went to 402 feet, top of the tower! ...a DB-224! The guys who run the RTTY repeater were envolved with getting the antenna to 400 feet; we shared our antenna and their feedline into two receivers. The arrangement didn't work out (for one reason or another); Martin came up with some half inch Andrews LDF and managed to replace the feedline with a little help from some friends and club members. The transmitter antenna, a Cushman 4-pole, managed to make it to 270 feet via 7/8 inch hardline of assorted vintage. The club purchased a Micor transmitter deck (exciter only). N5DBM, Ken, and KA5AFN, Bob, provided the funds for the 90 watt deck that was added to the Micor transmitter. N5DEW, Ron, provided (long term loan) a hefty 12 vdc supply to power the output deck.

Somewhere prior to all this Martin had the Motrac driving a Motorola 250 watt amp for about a year. Martin also came up with a voter system and a satellite receiver was installed in Guthrie. Martin did quite a bit of changes and improvements that I haven't mentioned; best of all though, he always kept the receiver and transmitter tuned to perfection. We all appreciated it.

At this point of chronological events Martin, WD5FEI, relinquished his position as trustee of the repeater. Bill Wright, KC5GN, took over as trustee of the repeater during the Summer of 1982. A repeater committee was formed and KC5GN, WB5GCX, and N5BUJ were appointed.

The rpt went to an on sight phone line and we also decided to move the control rack from my house to the repeater site so as to solve a problem with an UHF link that was causing problems (if ya can't fix it--get rid of it). KC5GN, KA5AFN, KB5RR, WB5GCX, and N5BUJ performed the above tasks; I apologize if I left anyone out.

During December of 1982 a Wacom duplexer was installed. The antenna at 270 ft had feedline problems so the duplexer was our solution, the antenna at 402 feet worked great. The duplexer was purchased with contributions from our club members.
About the same time, maybe before the duplexer, I built an audio mixer with built in osc for the IDer and courtesy beeper as well as solid state switches to handle the audio switching requirements of the satellite receiver and the auto-patch. The mixer consist of a one of a kind printed circuit board and is an active mixer; I couldn't be paid to build another one. The mixer is connected to a modified Heathkit phone patch; I removed the Heathkit potentiometers and essentially only used the meter and matching network or transformers. Sounds simple, but.....

Sometime during the early Spring of 82 I purchased a Demon Dialer from Heathkit and installed same on the repeater on a loan/trial basis. The trial period lasted into the Summer at which point the club decided that auto-dialing was nice but the Demon Dialer lacked with respect to our application, it was removed. Mike Smith, KA5MJT didn't know what he was volunteering for when he offered to build a custom microprocessor controlled auto-dialer for the club's repeater; it grew from auto-dialer to control functions as well.

Mike and I spent some time discussing the proposed methods of operation then I just dumped it into his lap. Mike built a custom board using the 8085 micro, the board has some spare I/O for future needs. The auto-dialer controller supports: open patch, closed patch, auto-dial, and control functions such as turning off the repeater or patch. Mike enlisted the aid of a friend to write the software, however; Steve Spence, KA5NRX, who worked with Mike and had just joined the club took over the software task. Steve and Mike spent many a hour of their own time debugging and perfecting the auto-dialer controller.

The black box was ready for installation in February of 84. First problem, although it was standard 19 inch rack mount it was too deep for our cabinet. Score: Murphy-1, Us-0. Some long stand-off spacers took care of that problem. The unit was wired up to the repeater and after some changes to the repeater (not the Auto-dialer mind you) it worked perfect the first time. The three of us: KA5NRX, KA5MJT, and N5BUJ had started in the afternoon and worked until 1:00 AM as I recall. It just takes time to beat Murphy. The next day a minor change was made to the mixer to improve the dialer audio level out of the mixer. Steve, Mike, and myself have made about three other trips to the repeater to implement various minor changes to the controller, minor changes that lasted into the early hours of the morning on occasion. Wouldn't be any fun if it worked right the first time.

Steve, KA5NRX, and his wife Mira, KA5NRY, moved to Texas last July. The club misses both, but wishes them the best.

Now that I've caught up to the present it's time to talk of recent problems and hopefully some of the cures.

The repeater didn't quite seem up to its old sensitivity but we didn't even know we had a problem until Martin, WD5FEI, called and said the repeater had a desense problem. Martin and I went to the repeater, he tuned it up

and we still had the problem. We swapped the RG-214/U between the duplexer and transmitter/receiver with some RG-8/U to determine if the cable was leaky, the desense was less with the RG-8/U cable. We pitched the RG-214/U. Some further tweaking on the xmitter and we thought it was fixed.

A couple of weeks later it was discovered that our repeater was desensitizing three other repeaters in the area. Martin came to our aid again and enlisted the help of one of his friends with a spectrum analyzer; they adjusted the transmitter and duplexer to improve the problem, however; cleanest signal and least reflected to the xmitter wasn't best pass through the duplexer. I assumed it wasn't quite right but it worked and wasn't bothering the other repeaters. Boy, was I wrong.

Prior to the known desense problem we had a problem with the receiver quitting.. Our investigation discovered that the air conditioners for the building weren't all working, the room was hot. This was August. We knew that the receiver would quit when the repeater had been on for a while so we blamed it on heat. Mike and I installed a second fan on the repeater. The xmitter already had a fan but the receiver is in the top of the cabinet so a fan was installed on the outside of the cabinet. Problem fixed, of course they also fixed the air conditioning system the next day.

The above was a case of not recognizing desense. Heat was the cause but the problem was desense. My thought was that you don't have desense problems when you have a duplexer.

You're thinking why don't I get on to the heat related cause. While looking for anything that could cause the problem I touched one of the filters soldered over one of the motorola output transistors; it fell apart. To make a long story short Martin and I replaced six such devices. These devices were thick film RC filters. They looked like a ceramic substrate with epoxy covering and a couple of ribbon type leads. This was the big problem.

The lesson here is that desense can occur with a duplexer; if the transmitter signal has garbage and the impedance isn't matched between the duplexer and transmitter, then the garbage is going to be radiated one way or the other even if only reflected back to the xmitter.

As if we hadn't had enough problems the repeater started having this loud buzz when cold. I replaced the cheap RG-8/U between the duplexer and xmitter/rcvr with some good RG-214/U that Ron, N5DFW, donated to the cause. No more buzz!

I borrowed a HP signal generater from KA5AFN, Bob Janda, and (following proceedure) tuned the Wacom duplexer and the helical cavities on the front end of the receiver. The next morning the receiver sensitivity seemed better but now we had an intermittant desense problem again. I borrowed Martin's Motorola manual and went clear through the receiver, a tune up that is. The intermittant desense problem was still with us. The repeater lived with this problem for about a week.

Saturday, October 13, Mike Smith (KA5MJT) and myself went to the repeater to see if we could correct (correct sounds better than "FIX" after our track record) the problem. The Bird was inserted between the duplexer and the transmitter. Initially the reflected power was almost zero, then an interesting thing occured; with the repeater keyed up the reflected power went to 3 watts very slowly. Unkeying the rpt for as little as 20 to 30 seconds would restore the reflected power to zero. The xmitter was connected directly to the antenna and the same phenomenon occured. The xmitter was allowed to fully warm up (read that as HOT) and then a couple of capacitors were tuned in the output section of the transmitter for maximum power. Reflected power went to zero and forward power climbed 12 watts. The xmitter was connected back through the duplexer and allowed to cook once again, looked good. Next test: The covers were removed from the xmitter and the cabinet door opened so as to allow an air conditioner to directly cool it down. Once the xmitter was very cold the rpt was buttoned up and power restored; reflected power was still practically zero and stayed there. The repeater has worked four days as of this writting without any new problems.

The repeater has gone from an old 20 watt railroad Motrac transmitter with a 50 ft antenna to a Micor 90 watt transmitter through a Wacom duplexer then via half inch aluminum hardline to a DB-224 antenna at 402 ft. The Motrac receiver still serves us well with the addition of a Micor squelch circuit (thanks to Martin, WD5FEI).

Whats in the future? The repeater committee hopes to keep the machine on the air in proper working order most of all. However, we will endeaver to bring forth improvements such as a new prom based IDer with selected messages, battery backup (we use to have battery backup prior to the 250 watt "cooker"), restore operation of the Guthrie remote receiver, condense some of the discrete control cards into a single package, and clean up the repeater cabinet in general.

The Edmond Amateur Radio Society, EARS, repeater is an open repeater for all to use. The repeater doesn't have "killer" hand-held coverage over the Oklahoma City area but works very well with a 10 watt mobile and 5/8 wave antenna. Please feel free to use the machine. We certainly would like for anyone who likes the machine to consider joining the club; however, we understand that one can't join every club in town. Whatever your decision you can count on EARS encouraging your use of our repeater.

My own personal opinion is that if you can afford the 2 meter equipment then you should at least attempt to support one of the repeater clubs in the area. The C&E is probably the wrong publication with respect to the audience the above is directed.

I will attempt provide some input into the C&E in the future on a regular basis with respect to repeater happenings.

N5BUJ
Bob McCoy Jr.

"STEVE" STEVENS HONORED

Thomas W. Stevens, W5VCJ, has been selected for elevation to the status of "Fellow" in the Radio Club of America. Just how great an honor that is may be judged from the fact that he's the only one in Oklahoma!

In case you're not acquainted with the RC of A, I'll quote: "Founded in 1909 as the world'S first radio communications society, The Radio Club of America is today regarded to be one of the nation's most prestigious groups of telecommunications executives and scientists."

There are two more Radio Amateurs in Oklahoma who are known to be members (Members, not Fellows) of the RC of A. They are Edwin A. Gilliland, NA5B, and Carl C. Drumeller, W5JJ.

Oklahoma and especially all Oklahoma Radio Amateurs can be proud of "Steve" Stevens! (Joe Buswell, K5JB, just received word. He is now a member.)

THE GOOD OLE DAZE

Transmitters

Transmitters were gigantic back in 1937, 8 & 9, my most active years as W5FVH. The cabinet big enough to house a kilowatt rig could also serve as a walk-in closet by an adult. Well, almost. Transmitters in those days were home made by their users, were separate from the receivers, used vacuum tubes and if designed for 'phone, transmitted the carrier and both sidebands. All of these factors added to the immensity and weight of a transmitter.

A full kilowatt using metal-chassis- and-cabinet construction could be a thing of beauty. I had the pleasure of seeing a couple of them built by my wealthy cohorts.

Some of the transmitters were, no doubt, built by other than the using amateur. Some were commercial. Every once in a while I would hear of one on the air, but I never saw one.

Most of the amateurs with whom I was closely associated built transmitters in the 100-watt class on wood boards with plywood or Masonite panels. A stage or several closely associated stages occupied a board "chassis" and panel unit. Three or four such units were needed for a 100-watt rig. All of the units were stacked one above the other in a wooden rack 3 to 6 feet tall. The panel width was about a foot and a half or maybe the standard of 19". My friends built them neat and left them alone except to operate. I had to experiment or otherwise continually mess with the stuff. My mother called me a genius; my sister ignored me.

Construction of anything except an occasional small special circuit is extremely rare today. A transceiver is beyond any attempt except perhaps by some rare individual who is ambitious and well equipped. So, how big a job was transmitter construction in the late 1930's?

A description of a rig was made by giving the tube line-up. Such a description followed the signal path starting with the oscillator. Each tube type in the RF section was named, then the modulator tubes were given. The design and construction followed the same path.

Let's look at the RF section. Using the ARRL Handbook, QST and from comments on the air, one could decide on a tube line up. The parts could be bought from a wholesale radio supply for 40% discount if you had an amateur radio license. Some suppliers had amateur radio parts as well as those for radio repair shops. A lot of parts could be obtained used at very low prices from other amateurs. Some were for free. There was much parts trading in my circle of friends.

Using sockets for the crystal, tubes and coils facilitated the construction, repair and band-changing. You could arrange the sockets and variable capacitors pretty much as the schematic diagram was drawn. Hot RF paths were kept short and direct. A few mica coupling and bypass capacitors were easy to set in place and had relatively standard values. A grid leak here, a cathode resistor there and you are done. The modulator and power supplies were laid out in a similar manner. Simple, straight forward circuits and the use of wood bases and panels made it relatively easy for some one slightly mechanically inclined to build a transmitter. The big problem was scraping the money together. Technical help was generous and always available.

The term "breadboard construction" was used back then also. It meant and means now to make a quick easy layout to check something. I don't think the wood base board construction and "breadboarding" are the same. Some of my base boards came from apple and orange crates. An occasional project used a cigar box chassis.

Back to the tube lineup. A very popular one was something like this: A 47 oscillator, 46 buffer with a 10 driving a pair of 10's in push pull, modulated by a pair of 46's in class B.

The type 10 tube should be commented on briefly in passing. It was designed for PA audio amplifier use and officially designated with another digit and maybe a letter. The amateurs put it in radio frequency amplifiers and applied two or three times the rated voltage. It performed like a champ. It's base was bakelite or "mud", not a good high frequency insulator. Amateurs would saw slots between the pins to lengthen the insulation path for the higher frequencies.

Tuning and repairing these rigs followed the same straight forward and highly visible signal path. Further visibility with a tuning indicator such as a loop lamp or neon bulb gave assurance that a stage was putting out some RF--just tune for the brightest light. Plate current dip and grid current peak while tuning up could also be indicated with a milliameter plugged into appropriate phone jacks. Meter shunts at each jack would allow one meter to serve an entire rig.

If the rig was built to allow the RF driver and final tubes to be seen through windows or by open construction, some transmitter functions could be approximated. The plates of the final RF amplifier tubes and maybe the driver tube would glow either by design or maladjustment. The glow would tell you something, depending on how much glow was permitted by design. Tubes designed for bright glowing plates cost more than the dull ones, so mine were dull.

Mercury vapor rectifier tubes produced a beautiful blue glow of the gas in the tubes & intensified as current increased. These tubes employed in a power supply for a class B modulator provided a dynamic visible display of the audio modulating power, dancing to the yakkity.

A feature or two described above still exist in linears, broadcast and TV transmitters, but I thought our approach to the equipment problem in the late 1930's would be interesting.

The post WWII surplus nearly stopped the amateur transmitter builders. Then came commercial transmitters, SSB transceivers, then solid state computerized rigs.

These rigs were educational. They were fun to build and experiment with. They were relatively easy to build and fix. One factor must not be overlooked and that is the helpfulness of fellow amateurs. They were and still are generous with their time and resources.

To be continued . . . . . .

Bill, WA5RAQ

HAM HAPPENINGS REFER TO CLUB SECTION FOR SPECIFICS

November 84

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

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	Aeronautical Center ARC 2	3
3855 kHz Dido Am 4	5	MORI Great Plains 6	ARDMORE 7	ALTUS AREA 8	9	SCARS ARDMORE COCO 10 COOKOUT!
Wheatstraw 11	CIMARRON EDMOND Club ELECTIONS 12	76'ers OU 13	ARDMORE 14	KAY County 15	16	VHF Club 17
18	EDIT Central Oklahoma Radio Amateurs COLLECTOR - EMITTER 19	AUTOPATCH 20	ARDMORE 21	THANKSGIVING 22	23	24
25	26	CORA AT RED CROSS 27 OKMULGEE VOLUNTEER EXAMS 2-5 777 PM	ARDMORE 28	29	30	