

Central Oklahoma Radio Amateurs

COLLECTOR

EMITTER

AND



SINGLE COPY

25¢

AN INFORMATIVE MAGAZINE  
PUBLISHED MONTHLY BY AND  
FOR OKLAHOMA RADIO  
AMATEURS

AND ANYONE INTERESTED IN  
LEARNING ABOUT IT

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NUMBER 38



# Central Oklahoma Radio Amateurs

## COLLECTOR AND EMITTER



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Central Oklahoma Radio Amateurs, Inc. (CORA) is a not-for-profit association of radio amateurs, founded for the promotion of interest in amateur radio communication and experimentation, for the advancement of the radio art and of the public welfare and operates to enhance the cooperation of member clubs in sponsoring activities of mutual interest to the clubs and all radio amateurs.

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### PARTICIPATING CLUBS FOR CORA COLLECTOR & EMITTER:

**AERONAUTICAL CENTER AMATEUR RADIO CLUB**  
Poatal Station 18, Okla City OK 73169  
MEETS: 8:00 PM First Friday each month  
Flight Standards Bldg, FAA Aero Center

Pres	Robert Graham	WB5NSV	677-8685
V-P	Robert Runyon	W5JES	373-1818
Sec/Tr	Bob James	K5FW	787-5793
Assist	Paul Asplin	WA5HTL	685-6590

**MID-OKLAHOMA REPEATOR**  
MEETS: 8:00 PM Tuesday, first full week  
in month. Okla City EOC, 4600 N Eastern

Pres	John Huckaby	K5QDR	672-4706
V-P	Bill Rogers	WA5RAQ	632-4375
Sec/Tr	Richard Zanni	WB6FYL	691-1809
Dues:	Sid Gerber, 829 E Bouse, MWC		73110

**OKLAHOMA UNIVERSITY AMATEUR RADIO CLUB**  
202 W Boyd, Room 219, Norman OK 73069  
MEETS: 1st & 3rd Wednesday, 8:00 PM  
STUDENT UNION, Room 161

Pres	Kenny Hutchison	WB5RXZ
V-P	Kirk Kirkland	WB5MJM
Sec	Nathan Kirby	WD5GWW
Treas	Mike Salem	WA5EPK

**BICENTENNIAL AMATEUR RADIO CLUB**  
MEETS: 3rd Tuesday each month 7:00 PM  
AIR National Guard, Will Rogers Airport

Pres	Ken Burdick	K5UAB	681-0281
V-P	Dick Baker	WB5TMW	685-2867
Sec	Mark Northcutt	WD5DYI	842-1086
Treas	Joe Ramage	WB5TDW	685-4814
Activities	Bill Riddles, WA5MZW		

**OKLAHOMA CENTRAL AMATEUR RADIO CLUB**  
323 NW 10th, Okla City OK 73103  
MEETS: 8:00 PM third Friday each month  
American Red Cross Bldg, 10th & Hudson

Pres	Ken Ford	WB5KHU	528-8770
V-P	Al Prince	WB5KCU	
Sec	Joe Buswell	K5JB	732-0676
Treas	Ellard Foster	W5KE	789-6702

**OKLAHOMA CITY AUTOPATCH ASSOCIATION**  
MEETS: 7:30 PM 3rd Tuesday, Monthly  
Oklahoma Military Academy 36th & Grand

Pres	Jim Denman	WB5OEL	681-6048
V-P	Joe Hustak	WA5ZNO	789-8587
Sec/Tr	Hobe Burgan	WB5MLN	751-1646

**CENTRAL OKLAHOMA RADIO AMATEURS,**  
MEETS: 7:30 PM, fourth Wednesday  
Red Cross Bldg., 10th & Hudson.  
Come to the alley entrance.

**ALTUS HAM CLUB**  
MEETS 7:30 PM, 2nd Thursday,  
North Main Fire Station (CD)

Pres	Bob Bratton	WD5BBW	782-3073
Sec/Tr	Janice Simms	WB5WMN	477-0921





## GREAT DX DAYS AT HAND?

For those of us who are relatively new to the hobby, this winter has been a time of growing excitement. We've heard the talk about the great days of DX back around 1958...and the promises that the new sunspot cycle will improve things soon beyond our imagining. February especially showed us that "the great days of DX" may indeed be coming back again.

The bands are changing, getting better all the time, especially 10 and 15. As DX picks up, 20 seems to get even more crowded. There have been days lately when 15 sounded almost equally crowded. But "the crowd" on 15 is not composed of those Wls we heard a year ago; now they're Europeans, Africans and Asians, with late-afternoon Oceania stations thrown in for spice.

The 15-meter band has been good much of the month of February, with Great Britain, Portugal, Spain, the Netherlands, Italy, Hungary, Greece, Scandinavia, and a few Africans coming in well, especially in the 1600-1800 Zulu time frame. The new United Nations call, 4U1UN, was heard and worked by many locally around 6-10 February with operator Larry logging them fast during his lunch break in New York. This station has asked for DX country status, but don't count it just yet.

Fifteen has seemed to change late in February, the skip going into Africa long, and shorter north-south. XE3BL was located in a modest pileup around the middle of the month, early in the morning, as 5s sought a 15 contact with Jose in Oaxaca. The DXpedition in Sudan, STØRK, was workable at 21.352 at midmonth around 2100 Zulu. Later in the month, UA6LDL was 56 in central Oklahoma at 1500 Zulu. Frequency was 21.284.9, and as Victor got stronger, the pileup grew apace.

Ten gets more exciting all the time. The skip here early in the month seemed to be the old north-south, with PY2s, OA8s, etc., but by the 7th of the month it was strongly into Europe. By mid-month, 10 seemed strongest into Africa, with ZE7, 9G1, A2C and the fellows working ZD8 coming in strong in the 2000 Zulu time slot. There was disappointment among members of the Norman mafia when 5H3BP wanted to ragchew on February 17 -- and talked himself out while the band changed and he was lost.

Operators were heard working Southeast Asia over the pole as well as longpath 1 more eastern precincts on 15, and enough ZLs were coming in late in the day to send one scurrying to the ARRL country list to distinguish between them. There were so many JAs calling CQ DX on 15 the evening of February 15 that the impulse was to forget it and let the 6s handle them all.

If readers would like to try making a column of this type a central repository local experiences with DX, they should contact the writer. If a few of the big guns were to send a list monthly of their recent DX contacts, say, along about the 20th of each month, other readers might get up-to-date poop on where and when to listen. What do you say?

Jack, WB5TZZ

### LEE'S DX

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ATTORNEY AT LAW

4614 N. MacARTHUR  
SUITE 100

OKLA. CITY, OKLA. 73122



February 3, 1978

## MINUTES - AERONAUTICAL CENTER AMATEUR RADIO CLUB

The meeting was called to order at 8 p.m. by President Graham. There were 50 members and guests present. Each member introduced himself. President Graham announced that we have had problems getting a repeater going but we are still going to buy one. Also still looking for a suitable antenna site.

Field day was brought up for the members to consider. If you have any feelings on this let your president know.

The program was given by Mike Riley on the 8002 system by Tektronix. This is a microprocessor analyzer.

The meeting was adjourned for coffee and doughnuts at 8:56 p.m.

Notes by Bill K5KDR  
For Bob K5FW

FOR SALE: ARRL Handbooks. 1930, 6th edition, hardbound, \$50; 1930, 7th edition, no cover, \$10; 1939 (?), no cover, \$5; 1943, 1944, 1951, 1963, 1969, 1970, 1971, 1972, 1973, 1974, 1976 at \$4 each. Many other technical books. W5JJ, 5824 N.W. 58th Street, Warr Acres, OK 73122. Phone 405-789-3788.

Meters, microphones, variable capacitors, coax and twin-ax fittings, and just one heck of a lot of other radio parts. If you're looking for parts contact W5JJ - 789-3788.

Wilson Handy-Talkie 1405SM with battery charger, case, 10 crystals, touch tone pad, and crystal filter. Elizabeth Donnelly, WB5WVD, 686-2281.

ICOM 22A, 8 ch w/xtals, Bob K5FW 787-5793.

## CENTRAL OKLAHOMA CHAPTER QCWA

The Central Oklahoma Chapter #63 held its quarterly meeting at Val Genes in Penn Square, Oklahoma City on Sunday, January 29, 1978. Newly elected officers were installed and current officers are:

Chairman - Ralph Rea, W5AA 685-0898  
Vice Chairman - Carl Drumeller, W5JJ 789-3788  
Secretary-Treasurer - George Holt, W5DDI 942-3450  
Director - Elmo Black, W5JCB 341-5126  
Director - Ellard Foster, W5KE 789-6702  
Director - Ray Long, W5TY 942-4314  
Director - George Lagaly, W5NTL 789-4073



MORE QCW A

This organization emphasizes fellowship both with members and their spouses who are invited to attend meetings. Some of the meetings are technical in nature but a varied program is often given to provide a general interest appeal. Sunday morning 8:30 a.m. meetings are held on 3850KHz with the members.

Visitors are always welcome at our quarterly meetings regardless of whether or not a person is currently eligible for membership. Announcement of our next quarterly meeting will be published along with information regarding a very timely and interesting program.

Any member or officer of this group will be more than happy to discuss your possible affiliation.

#### AMATEUR RADIO, AN EXCHANGE MAGAZINE

Published by the Wireless Institute of Australia, Amateur Radio has about the same relationship to Australian radio amateurs as QST has to American amateurs. Like QST, it carries many interesting articles.

As the ACARC receives its copy by surface mail, it arrives several months late. The current copy is dated November 1977. But many things are relatively timeless; so the reader finds numerous articles quite timely.

The November issue, should you wish to scan it at the ACARC clubroom, has a simple explanation of digital logic circuits in communication, a circuit for reading the beta of bipolar transistors, another circuit for a voltage-regulated, current-limited low-voltage power supply, and a slick idea for remote switching of filament circuits for those who might have a trunk-mounted hybrid (transistor/tube) transceiver.



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ED BLACKWELL  
WD5FKG  
Manager

Greetings from  
Doc Goodhead

WA5CZN

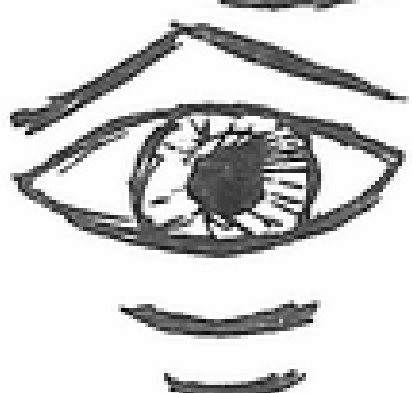
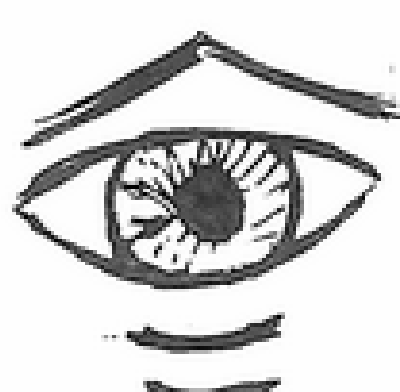
Making people see is my job,  
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M O R I

Mid-Oklahoma Repeater, Inc.

Do it on a MORI repeater

### MORI BUSINESS

NEXT MEETING will be on March 7, 1978 at 8:00 PM at the EOC, 4600 N. Eastern. The program will be by Dean Fraley, Director of the Oklahoma Insulation Advisory Council. He will tell us about insulation and how to insulate existing homes. Before this meeting begins (at 7:30) the Executive Committee will meet to discuss door prizes.

THE FEBRUARY MEETING was cancelled due to the snow.

449.1 IN ———> THE MORI UHF MACHINE ———> 444.1 OUT

A new duplexer has been installed on the 450 machine. This repeater is working better than ever according to a report from Joe, K5JB.

EQUIPMENT BUILDERS AND FIXERS: there is a net for you. Since one of their objectives is to build equipment like they used to in the OLD days, they call the net "OLD BUILDERS' ROUNDTABLE" It meets Sunday afternoons at 2 PM, CST on 7240 kHz. Other objectives are: Find parts & trade technical information. Don, WB5IEK, first alerted me to this net, and suggested I pass it on.

EYEBALL QSO'S are fun and they are easy to do. You may put an article into C & E almost as easily. Here's how: Just let me write down your story or description of some technical achievement or any other item that you think will interest or benefit other amateurs. It can be anything from one sentence long to a series of articles with sketches and photographs.

We know there are plenty of interesting things going on. Look around and listen to the vigorous conversations that are in progress before and after (and sometimes during) amateur meetings. A few of these subjects being discussed are surely worthy of sharing with the hundreds of C & E readers.

Contact me at 632-4375 (OKC). We can arrange a meeting at my shack or yours, where I can make notes and perhaps include diagrams, sketches, etc. Another method is for me to record your item via the phone. All of my "personal sketches" and some other articles were created during personal interviews or by recording.

DEADLINE for a specific issue: One week prior to the EDIT DATE for that issue. Extensive material may have to wait until I can process it.

Let's sparkle up the pages of C & E in 1978 with YOUR CONTRIBUTION!!!

+ + + + + Bill, WA5RAQ - - - - -

ASSISTANCE TO THE TRAVELER. Some of you guys can zap off directions with no trouble at all. Some of us are not too hot at this job, like me, for instance. The best help I have found for guiding travelers along the main roads and highways of Oklahoma City is the "Oklahoma City & Vicinity" map that is on the back of the Official State Map from the Department of Transportation. The maps are distributed "free" by the Oklahoma Tourist Information office, Will Rogers Memorial Ofc. Bg. Phone 521-2409. The OKC map measures 9" x 10½", so when cut out and stuck on a piece of cardboard or Masonite, a ready-reference is made that is handy to use. - - WA5RAQ - -



SIZZLINGS FROM THE KIND OLD ZOMBIE

SIZZ - 1 HAIR - TRIGGER HARRY and all his cohorts do not leave a gap between transmissions to let someone who wants or needs into the group. I intend to let the squelch tail drop and count to 3 before transmitting. We are all guilty of hair-triggering, especially when the discussion gets lively.

SIZZ - 2 WHO IS RESPONSIBLE? There are a lot of transmissions apparently being made by persons who are playing with available rigs. When a person keys a piece of transmitting equipment, does this make him or her responsible? I have a feeling the FCC will look to the licensed amateur. Let us look again into the security of our stations when we are not there. A squelched transceiver is very easily left on. Use a hidden or out-of-reach power switch or some other positive method of assuring that unauthorized persons will not key up your equipment. Take your responsibility.

SIZZ - 3 NAME CALLING. Several persons are in a bar, seated at a round table. These persons are engaged in conversation. Bill wants to say something. He says "Joe, Frank, John, this is Bill. I want to say this about that." When Bill gets through, he says, "Joe, Frank, John, this is Bill, go ahead Joe." Every time a sentence is spoken, everyone goes through this same sequence of calling everyone's name. This is silly. Instead of calling out all the names, just go ahead and talk. We know most of the voices anyway.

SIZZ - 4 WHEN YOU JOIN ONE, YOU DON'T JOIN 'EM ALL! When you join a CORA member club, you also join CORA, but there are no other double memberships in the Oklahoma City area that we know of. Privileges in one repeater club does not confer privileges of the repeaters of another organization. You are a visitor or guest of a repeater organization until you join the group and pay the dues, and thereby help support it.

= = = = = Sid, W5KOZ via WA5RAQ's recorder = = = = =

START 'EM YOUNG A little boy, about age 2, was running all over our waiting room at the Atlanta air terminal upsetting everything that was moveable. He got behind the nearby unoccupied dispatcher's desk and started pulling on two coiled mike cords that were within his reach. A lady he was obviously with pulled the boy away from the desk several times. She noted that I was watching the activity. As she wrenched the brat free from the mike cords for about the seventh time, she said, "He just loves to operate Grandmother's C. B." Things quieted down for a few minutes, then I noticed the boy was curled up on "Grandmother's" lap with a pacifier in his mouth. See also SIZZ - 2 above.

= = = = = Bill, WA5RAQ = = = = =

WANTED Collins S meter (0 - 1) for 75 S-1 Receiver. Call Jim, K5PER, 634-5235

MANY DO IT WRONG - MANY OVERDO IT. Why not strive to use the BARE MINIMUM I. D. required by the FCC, especially on repeaters? Quoted below is the first paragraph of the Ident. rules, 97.87. This is the latest, to the best of my knowledge.

"97.87 Station Identification. (a) An amateur station shall be identified by the transmission of its call sign at the beginning and end of each single transmission or exchange of transmissions and at intervals not to exceed 10 minutes during any single transmission or exchange of transmissions of more than 10 minutes duration. Additionally, at the end of an exchange of telegraphy (other than teleprinter) or telephony transmissions between amateur stations, the call sign (or the generally accepted network identifier) shall be given for the station, or for at least one of the group of stations, with which communication was established."



AMATEUR RADIO SEVERE WEATHER REPORTING SYSTEM 146.82 MHz CODE CHART 1978			
Code	North/South streets (west side)	Code	East/West streets (north side)
A	Gregory	1	220th Street
B	Cimarron	2	206
C	Richland	3	192
D	Frisco	4	178
E	Cemetery	5	164
F	Czech Hall	6	150
G	Mustang	7	Memorial Road
H	Sara	8	122
I	Morgan	9	108
J	County Line	10	Britton Road
K	Council	11	Wilshire Blvd.
L	Rockwell	12	63
M	Mac Arthur	13	50
N	Meridian	14	36
O	Portland	15	23
P	May	16	10th Street
Q	Pennsylvania	17	Reno
R	Western	18	15th Street
S	Santa Fe	19	29
T	High	20	44
U	Eastern	21	59
V	Bryant	22	74
W	Sunnylane	23	89
X	Sooner	24	104
Y	Air Depot	25	119
Z	Midwest	26	134
AA	Douglas	27	149
BB	Post	28	164
CC	Westminister	29	179th Street
DD	Anderson		(south side)
EE	Hiawassee		
FF	Henny		
GG	Choctaw		
HH	Indian Meridian		
II	Triple XXX		
JJ	Peebly		
KK	Luther		
LL	Dobbs		
MM	Harrah		
NN	Pottawatimie (east side)		
CONDITIONS			
1	Heavy rain, ½ block visibility		
2	Hail, any size		
3	Strong, damaging wind, 50+ MPH		
4	Cyclonic motion		
5	Tornado aloft		
6	TORNADO ON GROUND		

WA5RAQ

This is a rerun of the weather code chart that first appeared in Sept. '76 C & E, Page 20. The chart contains the street code data that appears on Gary England's weather map. Use the map or chart when reporting severe weather. Follow the net rules.

Make a Xerox copy of the chart, trim to the outline, put important and emergency phone numbers on the back, spray with a clear plastic and you have a handy reference that is easy to slip into the glove compartment, a pocket, etc.

= + = + = Bill, WA5RAQ , MORI = +

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#### FLEA-MARKET SUCCESSFUL

As had been promised, the delayed flea-market program (originally scheduled for January) went off as scheduled on February 6, 1978, thanks to the efforts of Hobe - WB5MLN. It was refreshing to see such a good turnout to "barter" for a good variety of goodies (including boat anchors) which many of us just couldn't live without.

It was announced at this get-together that a special small building is being erected at the base of the Channel 9 tower to house the repeater equipment. This will greatly aid in maintenance and updating when necessary (and just in time for weather - net activities).

Also announced was the fact that our severe weather net will have greater coverage this year with the addition of KTOK, 1000 on your AM dial and KZUE, 103 on your FM dial. Coupled with smiling Gary England's telecasts on Channel 9, our coverage should prove to be the greatest and certainly most effective.

#### HEY - LOOKEE HERE

Our proposal to stage flea-market type meetings on alternate months will continue. Since the one previously scheduled for January (but actually held in February) was well received we will hold another on March 21, 1978.

Dig out those items that are looking for a new owner and let's have at it. Same location - - same time as before.

Members of other clubs are invited to visit with us.

\* \* \*

WANTED: Reasonably priced CW transceiver for a "budding" novice. Call evenings, 634-4869, Bob - WD5AHF.

\* \* \*

#### HAWAIIAN MOON BOUNCE

In the September, 1977 issue of Collector and Emitter, it was announced that Marshall Williams - K5MB (Ex WA5UNL) would journey into KH6 land for an Earth - Moon - Earth DXpedition. Well, friends, it happened in January of this year.

Marshall set up shop at KH6HI and operated on 144.017 MHz. This was the first recorded EME activity since KH6NS was active in Hawaii several years ago. Approximately 20 stations in 15 states were logged during this expedition. Suprisingly enough, Marshall observed that there was a scarcity of "moon-bouncers" in Oklahoma.

A great article appeared in the January 22, 1978, issue of Orbit Magazine. Two full pages were devoted toward Marshall's background and his entry as well as diversified experiences in the amateur radio field. Of course, a good portion was devoted to "moon-bounce" activities. Perhaps, at some future date, we might impose on K5MB to present a club program on this exciting aspect of amateur radio.

\* \* \*

Seen in the LA Times: Middle age is when you feel on Saturday night the way you used to feel on Monday morning.

\* \* \*



HR REPORT EXCERPTS

AN AMATEUR'S RIGHT to a tower will reach the U.S. Supreme Court for the first time as a result of a long-standing battle by a West Coast Amateur with the City of Cerritos, California. An appeal challenging the Constitutionality of a municipal zoning ordinance regulating antenna height was just filed with the Court this month. (January, 1978)

In An Earlier Action the California Appellate had found the city's antenna limit Constitutional, and that court's decision was appealed to the California Supreme Court which refused to hear the appeal.

Since This New Appeal challenges the Constitutionality of an ordinance, the U. S. Supreme Court must hear the case. It may make the Court's fall session, in which case it could be heard yet this year. Thanks Personal Communications Foundation.

ELECTRONIC WATCHES, especially LED models, can be permanently damaged by exposure to RF fields. K9EPM wiped out several segments of his watch's display working on a 90 W amp. Thanks K9DUR.

PROPAGATION FEBRUARY 13-28. Conditions for ARRL's first DX contest weekend were everything hoped for, exhibiting the fruits of the sharp upswing in sunspot cycle 21's solar activity. Unencumbered by a barely detectable polar path disturbance, MUFs soared slightly higher than predicted, thus satisfying the most avid 10 meter DX chaser. Solar flux shot up to 169 on Sunday, finishing the weekend's fray in fine form. Oak cautions 5BDXCC aspirants not to rush their 10 meter chasing, as the band is now back to stay through at least 1982!

Current Observations (February 8) indicate that solar activity is still abundant with solar flux levels hovering around 160, though the slight decline anticipated last week is still likely. Lively conditions will continue, however, as old Sol's pot boils with the chance of new flare activity. Despite expectations of good to excellent DXing through the forecast period, it's uncertain just how good the February 18-19 CW DX Contest weekend is going to be - though all indications are favorable as spring-time benefits spice the brew.

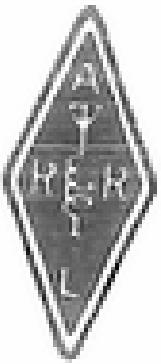
As to When And Where, the pattern should follow the Phone weekend's (HRR 186) with some further deterioration of long path signals and complementary improvements in short paths on 7, 14, and 21 MHz. Slightly longer daylight hours will benefit the higher frequencies, and if conditions remain excellent 14 MHz could remain open around the clock for testers.

Scheduled Polar Path disturbances aren't on tap until February 25-28, and unpredicted flare-induce upsets are a less than 50-50 proposition. With sunspot numbers moving toward the high 60s, Oak opines the dedicated DXer will find lots of rewards if he spends the rest of the winter in the shack!

\* \* \*

FOR SALE: Henry 4-K Linear, 80 through 10 meters. 50 watts will drive. \$1,300. Call Marshall - K5MB, area 405/787-9292 or 787-9545.

\* \* \*



ALTUS  
HAM  
CLUB

The January meeting of the Altus Ham Club was devoted to planning meetings and events for the upcoming year. This years club officers are President: Bob Bratton, WD5BZW; and the Secretary-Treasurer is Richard Spencer, W35PUF.

Ahead of us is a new year which has many events which we ALL can get involved. I emphasize the All because there are enough events happening in the world of Amateur Radio to satisfy everyone. Sure the dozen or so of us who regularly attend the meetings may not be involved in the particular facet of Amateur Radio that is your "thing" or if we are maybe we are not doing it as well as you could, so bring yourself and your knowledge and experience to the meetings and give us a hand.

Amateurs have a fine record of helping others and each other. We as a group have a tremendous wealth of knowledge and experience available to share. New ideas and projects, along with the old ones are everywhere but we need to get together to share them. I will admit that it is easier to sit comfortably at home and say you have something else planned or that you "forgot" about the meeting, but just stop and think for a minute, What is the Amateur Radio Service? Well, our license manual defines it as "a radio communication service of self-training, intercommunications and technical investigation." The term self-training means we learn from within our own organization by teaching the newer and younger operators. Giving them guidance in communication procedures and practices, and using our own skills and abilities to help them sharpen their's.

What about "intercommunication?" Does it mean picking up a microphone or a key and communicating with a "Zed L" or a "JA", yes, of course, but it also means sharing your experiences and abilities locally with those you know personally and talk to each day. OK, now what about "Technical investigation"? Well it is erroneously believed by many operators from Novice thru Extra class, that the higher classes are the only ones who know that they are doing; or are really qualified to call themselves Amateur Radio Operators. Baloney!!! Technology is advancing so fast that no one person could ever hope to keep up with it all. Many are qualified in different

March 1978

phases of our hobby and we can all benefit greatly by sharing our knowledge and experiences with others.

Do you have any ideas for field day, contests, weather watches, or a club station (we have some equipment for one), a local CW or SSB net, a hamfest, transmitter hunt, or anything that would be of interest to fellow operators? Well, come and share with us. Participation is what will make this organization more interesting and successful.

Richard Spencer, WB5PUF

The Altus Ham Club met Thursday, February 16, 7:30 p.m. at the North Main Fire Station. Twenty six attended.

President Bob Bratton, WD5B3W called the meeting to order and introductions followed. Upon resignation of Secretary-Treasurer Richard Spencer, WB5PUF an election was held to fill the office. Janice Simms, WB5MMN was elected.

Other business conducted included the presentation of the proposed constitution. It was accepted. Discussion was held concerning changing the name of the organization, but action was delayed until the next meeting.

A committee was appointed to make plans and arrangements to begin Amateur Radio classes. Committee members include: Chuck Smith, WB5MJS; Dave Horn, KØJPK; Kenneth Ingham, WD5BET; and Janice Simms, WB5MMN.

Loren Simms, WA5C3F reported on the Oklahoma Repeater Society meeting he attended January 14, 1978 in Norman.

Dwight Dennis, WB5KRH, Emergency Co-ordinator and Loren Simms, WA5C3F assistant EC for Jackson County presented a program concerning the local weather watch procedures. Slides and a recording tape of the tornado which hit Tipton, Oklahoma on May 20, 1977 were presented. Dwight also gave a progress report on the HF station and the Hy-Gain 18 HT antenna which will be operated during weather watch. Discussion was held concerning a weekly net. It was decided to hold an unscheduled practice weather net sometime during the month.

Dwight reported that the new controller for the repeater has arrived and will be installed as soon as possible.

Welcome to three new members: Mark Flavin, N6MF; Mike Schenkle, WD5HXS; and Phillip Walker, WD5IRU.

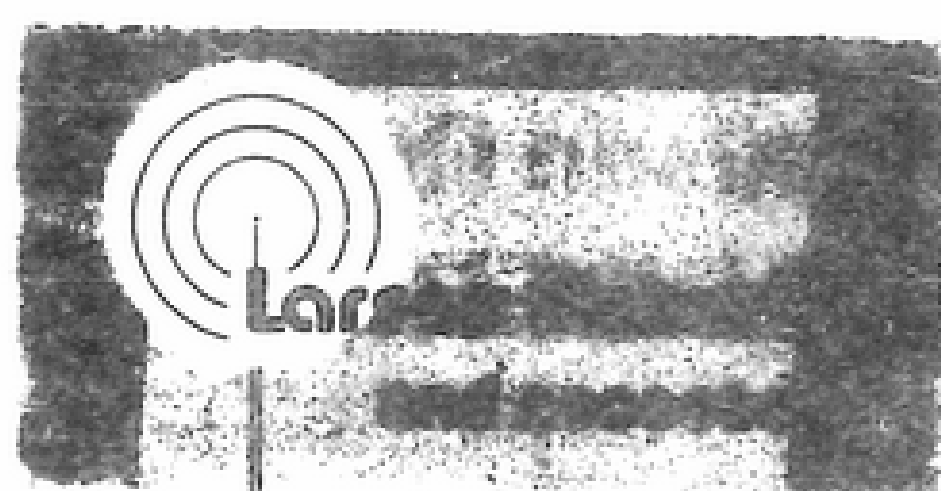
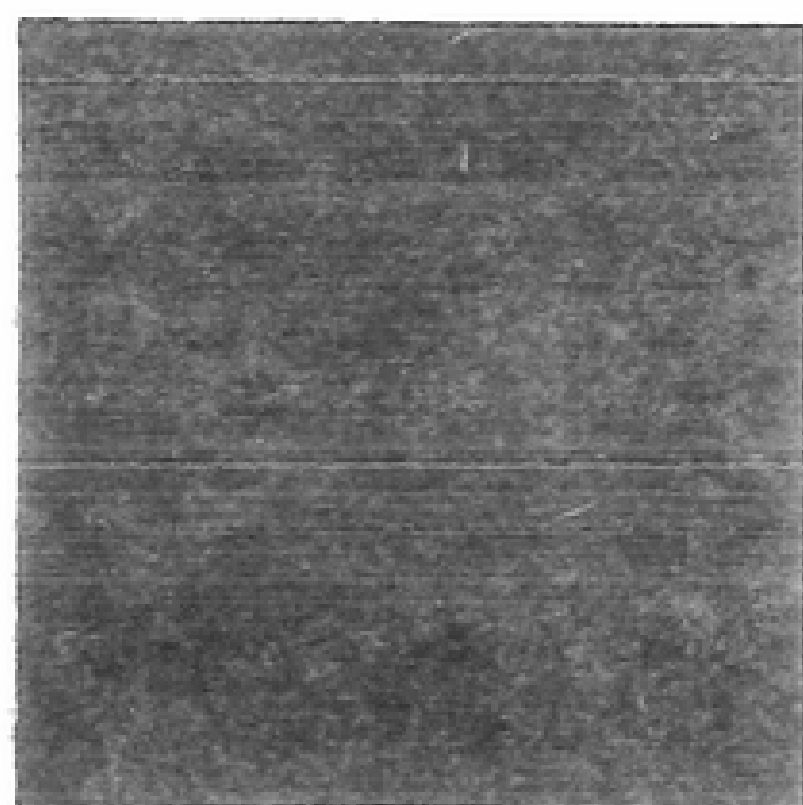
#### IMPORTANT DATES TO REMEMBER:

- February 21 - National Weather Service presentation for Jackson County weather watch. 7:30 p.m. city auditorium.
- March 9 - Club Meeting, 7:30 p.m. North Main Fire Station
- March 16 - Presentation by Gary England on severe weather in Oklahoma.

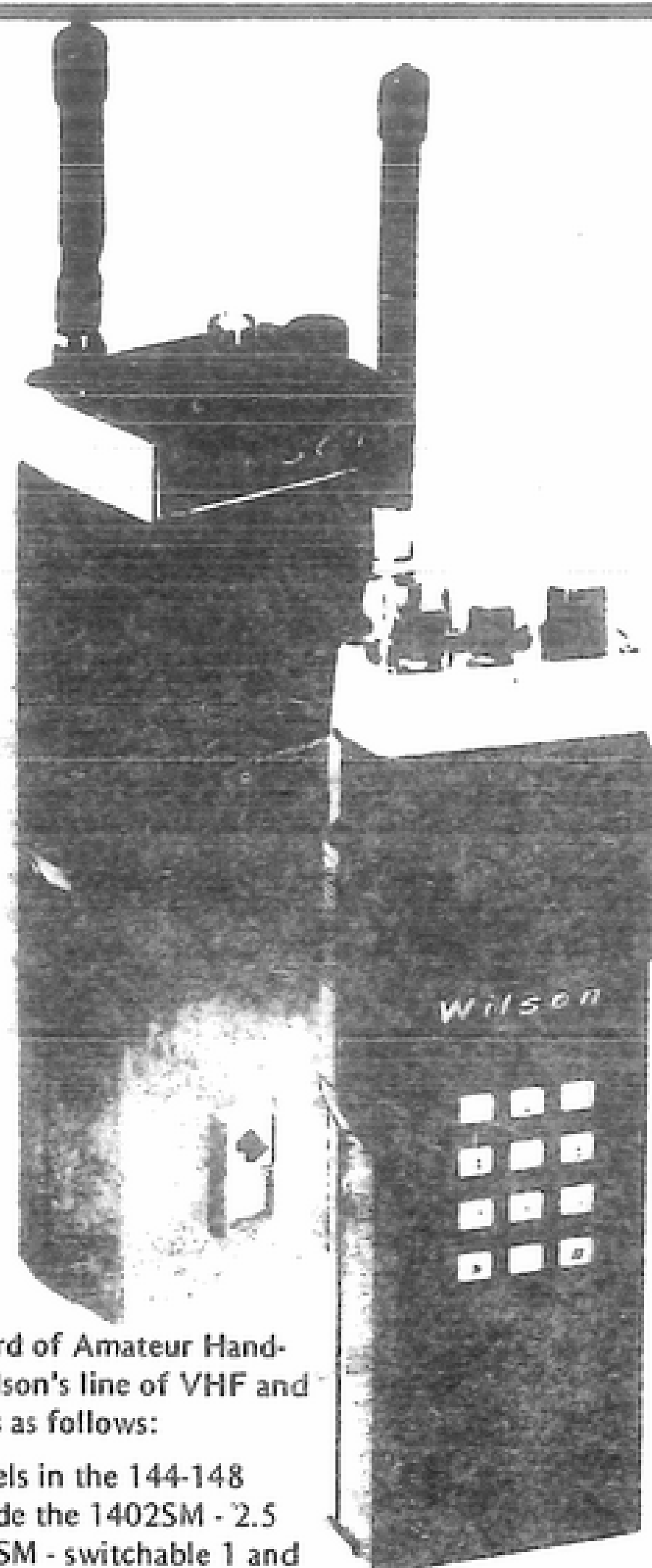
# Wilson Electronics Corp.

**First Name in Amateur  
Hand-Helds**

## OPTIONS AND ACCESSORIES



*Illustrated  
at right is  
Model  
1402SM  
2.5 watt  
144-148  
MHz*



The standard of Amateur Hand-Helds is Wilson's line of VHF and UHF radios as follows:

Three models in the 144-148 range include the 1402SM - 2.5 watt, 1405SM - switchable 1 and 5 watt, and 1407SM - 7 watt units, one unit in the 220 band: Model 2202SM - 2.5 watt, and Model 4502SM - switchable 1 and 1.8 watt unit is in the 450 range.

*Illustrated above is 1405SM with optional Touch Tone Pad (Models 4502 and 2202 have similar appearance.)*

## MICROWAVE MODULES

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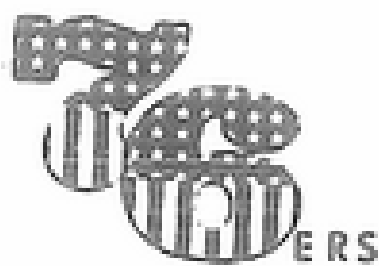
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## THE BICENTENNIAL AMATEUR RADIO CLUB



With the passing of February, I hope this will be the last of the snow.

The repeaters were pretty busy this last couple of months and a lot of meaningful message handling and information passed. This really points out our moral duty as being associated with a communications service that, as well as having a fun hobby, we also have a serious responsibility for using our skills for humane purposes. Because we are in the ham radio fraternity, lets remeber to give public service a little thought. It is really appreciated when you can make a phone call for someone to ease a little tension, or to report an accident to help others avoid the location and inform authorities. To you who have contri-buted your help, we would like to give a personal thanks! Even though you don't expect it.

Speaking of public services did you happen to hear 34/94 January 29? There was a simulated airplane crash at Northwest 10th & MacArthur. Did you participate? Did you wonder what all those messages were for? Did you know that amateurs work directly with civil authorities in relay ing communications in emergency situations? Are you interested? Would you like to find out how you can do this? Then call Coy Day, N5OK our COUNTY EMERGENCY COORDINATOR, at 691-1194 and find out how you can participate. Its fun.

Our next meeting is going to be a real biggy. Bill Riddles N5WM has a big program planned. Planning should be starting for field day (More Public Service Practice). FUN! FUN! FUN! Don't miss a meeting because you forgot. Mark your calendar right now! ..... Did you mark it? OK see you there. What direction would you like to see the club go? You will be surprised how much you can get out of a meeting, when you get involved. Do you think that you don't have anything to offer? Wrong! I know a guy that copies code at 35 WPM solid all evening. I would like to know how he does it, wouldn't you? If he would do a little talk or write an article in Collector & Emitter, I would like to read or hear it, wouldn't you? This is just one of hundreds of ways we can contribute. Articles like Greg Peck's experiences with his new antenna was not all that technical, but it was good reading, don't you think? So lets start hearing from the silent majority.

Our next meeting is March 21, 1978 at 7:00 p.m., all are invited and guests are of course welcome. Ken, K5UAB



## Club NEWS

WSLOW  
The Elmer Gooder Memorial  
Station

### FEBRUARY MEETING

INFORMAL MEETING WAS HELD FRIDAY FEBRUARY 17, WITH TEN MEMBERS AND ONE GUEST PRESENT. NO FORMAL MEETING WAS CALLED. CORA RESPONSIBILITY WAS DISCUSSED. DISCUSSION WAS ALSO HELD CONCERNING DISPOSAL OF EXCESS CLUB PROPERTY. THIS WAS OLD BUSINESS ALREADY VOTED ON BY CLUB MEMBERS AT A REGULAR MEETING. IDEA WAS PUT FORTH BY PAUL, WA5HTL, TO BUILD A C.O.R. CONTROL CIRCUIT FOR THE PYE TWO METER TRANSMITTER AND RECEIVER AND MAKE A PORTABLE REPEATER FOR TEST AND DISASTER USE ONLY. INFORMAL MEETING AJOURNED. HOME MADE CAKE BY GARNET FOSTER AND COFFEE WAS ENJOYED BY ALL. WA5JGU FOR K5JB, SEC'Y

"I ran out of excuses, when they came after me in a four-wheel-drive vehicle"

By the time this reaches you I hope what has seemed to be a continuous series of snow and ice will have ended. Because of the weather no formal meeting was conducted in February. However ten "brave souls" ventured forth on meeting night including one of the students from the current round of classes. The majority of those attending were rounded up by the vice-president, WB5KCU, in his four-wheel-drive vehicle. A pot of coffee, a cake donated by W5KE's wife, and plenty of round-table conversation was enjoyed by all.

Paul, WA5HTL, rounded up som interesting prizes as promised. These will be available by drawing at the next formal meeting. Tickets will be sold at the meeting.

The planned program by charlie, WA5JGU, on setting up the new amateur station will be rescheduled for the March meeting. I hope that the students from the classes will find this program interesting as well other new and established amateur radio operators.

#### In the months to come.

Bob, W5HXL has been asked to present a program on home-brew construction methods and parts scrounging. I hope that this April program will be complete with a show and tell period from Bob's junque box treasury.

By the time the next C & E goes to press the Saturday morning coffee drinkers should have had a chance to go through the accumulating goodies in the club station and decide which are surplus to the needs of the station. Already on the list are an oscilloscope, a signal generator, and a VTVM. These items will be available on an auction basis closing in the April meeting. Look for more details in the next issue. KEN, WB5KHU, PRES.

#### MORE MISUSES FOR EQUIPMENT - SCANNER EXPLOIT

SINCE PROGRAMMABLE SCANNING RECEIVERS ARE BECOMING SO POPULAR, I THOUGHT I WOULD PASS ALONG SOME HINTS I HAVE FOUND USEFUL FOR USING SCANNERS IN THE HAM SHACK AND ALSO MENTION A CAUTION WHICH SHOULD BE EXERCISED IN THEIR USE.

LIKE ANY OTHER SUPERHET RECEIVER, A VHF SCANNER HAS A LOCAL OSCILLATOR WHICH IS PROVIDING A SIGNAL HAVING A FREQUENCY OFFSET FROM THE RECEIVED SIGNAL BY THE VALUE OF THE INTERMEDIATE FREQUENCY (I.F.). FOR EXAMPLE, IF THE I.F. IS 10.7 MHZ, AND THE RECEIVER IS LISTENING TO 146.52 MHZ, THE LOCAL OSCILLATOR IS RUNNING AT EITHER 135.82 OR 157.22 MHZ. A SENSITIVE RECEIVER TUNED TO THE FREQUENCY OF THE LOCAL OSCILLATOR OF THE SCANNER WILL BE ABLE TO PICK UP THE SIGNAL. THIS CAN BE BENEFICIAL OR HARMFUL DEPENDING ON THE CIRCUMSTANCES.

THE LOCAL OSCILLATOR OF A PROGRAMMABLE RECEIVER CAN SOMETIMES BE SET ON THE FREQUENCY OF A RECEIVER THAT NEEDS TO BE TESTED OR TUNED UP AND CAN THEREFORE SERVE AS A SIGNAL GENERATOR OF EXCEPTIONAL ACCURACY. FOR EXAMPLE A BEARCAT 101 OR 210 SCANNER HAS A 10.8 MHZ I.F. AND THE LOCAL OSCILLATOR OPERATES BELOW THE INTENDED RECEIVE FREQUENCY. TO GENERATE A SIGNAL ON 146.52 MHZ, THE SCANNER CAN BE PROGRAMMED TO 146.52 PLUS 10.8, WHICH IS 157.32 MHZ.

THE FREQUENCY STABILITY OF THE TEST SIGNAL, HAVING BEEN DERIVED FROM A CRYSTAL CONTROLLED TIME BASE, IS USUALLY VERY GOOD. IT IS A TREMENDOUS IMPROVEMENT OVER MY GRID DIP OSCILLATOR AT VHF AND UHF FREQUENCIES. SOMETIMES, IF THE LOCAL OSCILLATOR WON'T TUNE TO THE FREQUENCY OF INTEREST, IT CAN BE TUNED TO A LOWER FREQUENCY, ONE HALF, ONE THIRD, ONE FOURTH, ETC., OF THE DESIRED FREQUENCY. THERE MAY BE SUFFICIENT HARMONIC CONTENT TO BE USABLE. BECAUSE OF THE METHOD USED TO CONTROL FREQUENCY OF THE LOCAL OSCILLATOR, THERE MAY BE ENERGY PRESENT ON INTEGRAL SUBDIVISIONS OF THE LOCAL OSCILLATOR FREQUENCY. FOR EXAMPLE, WITH THE OSCILLATOR RUNNING AT 150 MHZ, THERE MAY BE SIGNALS PRESENT ON 75, 50, 37.5, 30, ETC., MHZ. THESE WOULD BE GENERATED BY THE DIGITAL CIRCUITRY WHICH IS DIVIDING THE OSCILLATOR FREQUENCY DOWN FOR COMPARISON WITH THE REFERENCE FREQUENCY IN THE SYNTHESIZER.

THE SIGNAL WHICH LEAKS OUT OF THE RECEIVER MAY BE USABLE AS IS, BUT I FIND IT MORE CONVENIENT TO GET AN ELECTRICAL HOOKUP TO THE RECEIVER UNDER TEST. THE SIGNAL IS MORE EASILY CONTROLLED AND READINGS ON TEST POINTS ARE MORE MEANINGFUL. TWO METHODS I HAVE USED ARE CONNECTION TO THE SCANNER ANTENNA TERMINAL AND CONNECTION TO A RECEIVING ANTENNA POSITIONED NEAR THE SCANNER. THE FORMER WORKS FAIRLY WELL BUT HAS AN INHERENT RISK OF DAMAGE TO THE SCANNER IF THE EQUIPMENT UNDER TEST IS A TRANSCEIVER AND IS INADVERTENTLY KEYED. AN ANTENNA CONSISTING OF A DIPOLE CONNECTED TO COAX CAN BE POSITIONED NEAR THE RECEIVER AND THE RECEIVER SET ON A SHELF OR WORKSPACE SEVERAL FEET AWAY FROM THE EQUIPMENT UNDER TEST. THIS SEPARATION REDUCES SIGNALS RADIATED DIRECTLY AND ALLOWS BETTER CONTROL OF INJECTION SIGNAL STRENGTH. I HAVE USED AN ATTENUATOR TO CONTROL SIGNAL LEVEL BUT FOUND IT WORKED JUST AS WELL TO COLLAPSE THE SCANNER'S BUILT IN WHIP ANTENNA UNTIL DESIRED SIGNAL STRENGTH IS REACHED. IF THE SIGNAL IS TOO STRONG DURING LATER STAGES OF TUNE UP, I MOVE THE SCANNER TO ANOTHER ROOM AND FOR FINAL SENSITIVITY CHECK, GO OUTSIDE AND WALK DOWN THE STREET WITH THE RECEIVER UNDER TEST. I KNOW FROM EXPERIENCE THAT A REASONABLY SENSITIVE WALKIE TALKIE WILL PICK UP THE SCANNER OSCILLATOR ABOUT A BLOCK AWAY.

THIS LEADS INTO THE CAUTION I WANTED TO PASS ALONG. THESE RECEIVERS ARE SUPPOSED TO MEET THE RADIATION LIMITATIONS IN PART 15 OF THE FCC RULES AND REGULATIONS. THE RADIATION LIMITS IMPOSED ARE LOW ENOUGH TO PREVENT DEVICES FROM BECOMING A HAZARD BY CAUSING INTERFERENCE BUT DO NOT PREVENT THEM FROM BEING A NUISANCE. WHEN CONNECTED TO AN OUTSIDE HIGH GAIN ANTENNA, SUFFICIENT ENERGY MAY BE AVAILABLE TO SPOIL SOMEONE'S LISTENING PLEASURE IF THE SCANNER IS PUTTING OUT SIGNALS ON ANOTHER RECEIVER'S FREQUENCY. MY SCANNER CAN BE TUNED TO MAKE A MESS ON A NEARBY TELEVISION. THIS INTERFERENCE COULD BRING SOME UNJUST CRITICISM FROM NEIGHBORS WHO DON'T CARE FOR YOUR ANTENNA FARM MUCH ANYWAY. THE SUGGESTION I HAVE IS NOT TO USE ANY MORE ANTENNA THAN IS NEEDED FOR THE PURPOSE, PARTICULARLY WHEN SCANNING.

IF NEAR A REPEATER INSTALLATION, ONE MAY BE ABLE TO KEY THE REPEATER WITH THE SCANNER CAUSING MUCH UNNECESSARY WEeping AND GNASHING OF TEETH. ONE STORY I HEARD WAS ABOUT AN INTERMITTENT INTERFERENCE CAUSED BY SECOND HARMONIC OF AN FM BROADCAST RECEIVER INSTALLED IN AN ELEVATOR. THE ELEVATOR WAS KEYING A 220 MHZ REPEATER LOCATED ON THE TOP FLOOR OF THE BUILDING WHENEVER IT WENT TO THE UPPER FLOORS. IT TOOK SOME DETECTIVE WORK TO FIND THAT ONE, I BET.

IF SOMEONE WAS REALLY AMBITIOUS, I DON'T DOUBT HE COULD INSTALL A BROAD BAND BUFFER IN A BEARCAT AND BRING THE SIGNAL FROM THE LOCAL OSCILLATOR OUT TO A MIXER. ADD 10.8 FOR SIMPLEX, 10.2 FOR REPEATER OFFSET ON 146, OR 11.4 FOR REPEATER OFFSET ON 147, ADD A SUITABLE MODULATOR AND AMPLIFIER AND BE ON THE AIR WITH A NIFTY SYNTHESIZED RIG. MY SCANNER COLLAPSES IN PRESENCE OF A STRONG RF FIELD SO IT MAY

BE NECESSARY TO ADD SHIELDING OR MAKE POSITIVE ISOLATION BETWEEN TRANSMITTER AND RECEIVER DURING PERIODS OF TRANSMIT. SINCE THERE AREN'T AN ABUNDANCE OF UHF TRANSCIEVERS, THE TRICK MIGHT WORK BEST ON UHF BUT IT WOULD BE NECESSARY TO DO SOME CAREFUL FILTERING TO KEEP THE UNDESIRABLE MIXER PRODUCTS OFF THE AIR. TO GET ON 444.1 REPEATER, ONE WOULD SET THE SCANNER ON 444.1. LOCAL OSCILLATOR FREQUENCY ON A BEARCAT WOULD BE 433.3. IN THE MIXER, THE INJECTION FREQUENCY WOULD BE 15.8 MHZ TO GET AN OUTPUT ON 449.1, THE REPEATER INPUT. UNDESIRABLE OUTPUTS THAT WOULD HAVE TO BE FILTERED WOULD BE 433.3 AND 417.5. I WOULDN'T THINK THIS WOULD BE TOO DIFFICULT. TO TALK TO SOMEONE ON A TYPICAL SIMPLEX FREQUENCY, IT WOULD REQUIRE A LITTLE BETTER FILTERING. TO TRANSMIT ON 446.0, THE LOCAL OSCILLATOR FREQUENCY OF 437.2 AND UNDESIRABLE MIXER PRODUCT OF 426.4 WOULD HAVE TO BE FILTERED. THE 437.2 ONE COULD BE MINIMIZED BY USING A BALANCED MIXER IF YOU KNEW HOW TO DO IT ON UHF (WITHOUT GOING TO VACUUM TUBES, PERISH THE THOUGHT!).

IT'S FOOD FOR THOUGHT ANYWAY. MAYBE SOMEONE'S AMBITIONS ARE STRONGER THAN MINE. I CERTAINLY CAN'T BLAME THE PRETTY WEATHER FOR NOT BEING MORE PRODUCTIVE IN THE HOB-BY ROOM.  
JOE, K5JB

#### WHERE'D THAT SIGNAL COME FROM?

I WAS SURPRISED TO FIND MY NAME AND CALL REFERRED TO IN THE ARTICLE ON RADIO DIRECTION FINDING IN THE MARCH 1978 ISSUE OF HAM RADIO HORIZONS. THE ARTICLE PREPARED BY ALF WILSON, W6NIF, DESCRIBES TECHNIQUES AND EQUIPMENT DEVELOPED BY THE HAPPY FLYERS, AN ASSOCIATION OF AMATEUR RADIO OPERATORS WHO ARE ALSO PILOTS. SOME TIME AGO I WROTE A LETTER TO HART POSTLETHWAITE, WB6CQW, TELLING HIM HOW WELL MY UNIT WORKED AND HOW I USED IT FOR DIRECTION FINDING FROM THE CAR. THE METHOD I USED WAS THE ONLY WAY I COULD THINK OF TO DO IT "ON THE RUN." I WAS SURPRISED TO SEE IT IMPRESSED ANYONE. I GUESS IN OTHER AREAS OF THE COUNTRY, BANDIT HUNTERS HOP IN A SHERMAN TANK AND GO STRAIGHT TO THE SIGNAL.

I HAVEN'T HEARD MUCH CONSTRUCTIVE DISCUSSION ABOUT RDF UNTIL BILL, WB5SXG CAME TO MORI MEETING AND SHOWED OFF HIS PORTABLE QUAD. I WOULD LIKE TO KNOW IF ANY OF THE OTHERS IN TOWN WHO HAD THE PARTS EVER GOT THEIR HAPPY FLYER'S UNITS GOING. IT IS UNDERSTANDABLE THAT A PERSON WITH ONE MIGHT KEEP A LOW PROFILE TO MAKE IT EASIER TO SNEAK UP ON A BANDIT BUT I DON'T AGREE WITH THAT APPROACH. I THINK THEY ARE A DETERRENT AND THUS ARE RESPONSIBLE FOR KEEPING THE BAND A LITTLE LESS CLUTTERED IF THE MISCHIEVIOUS KNOW HOW WELL THEY WORK. THEY WORK JUST AS WELL ON A SHORT BURST OF CARRIER AS THEY DO WHEN SOMEONE SITS ON A MIKE BUTTON. IN FIVE KERCHUNKS I CAN HAVE THE AZMUTH TO THE SOURCE WITHIN 10 DEGREES FROM WORST CASE ON EACH KERCHUNK. NORMALLY IT TAKES FOUR KERCHUNKS TO GET WITHIN 10 DEGREES.

NEEDLESS TO SAY, IF ANYONE HAS TRIED TO BUILD A HAPPY FLYERS DF UNIT AND FAILED TO GET IT WORKING PROPERLY, I WILL BE GLAD TO LEND TECHNICAL ADVICE. JOE, K5JB

#### PORTABLE SOLDERING IRON REPAIR

IF YOU WERE THE FIRST KID ON THE BLOCK WITH A BATTERY OPERATED PORTABLE SOLDERING IRON, YOU HAVE PROBABLY EITHER CHANGED THE BATTERIES OR THROWN IT AWAY BECAUSE THE THINGS ARE PRETTY LIMITED IN LIFE (MINE ONLY LASTED FIVE YEARS OR SO!).

THIS WEEK, I HAD THE IRON GO FLAT AND DECIDED TO TRY A QUICK FIX AND SEE IF IT WOULD WORK. TO GAIN ELECTRICAL ACCESS TO THE NI-CAD CELLS WITHOUT DISASSEMBLING THE IRON, I REMOVED THE TIP AND MEASURED THE VOLTAGE ACROSS THE TIP HOLDERS WITH THE BUTTON ON THE IRON DEPRESSED. IT MEASURED ABOUT A VOLT AND A QUARTER, INDICATING THAT ONE CELL WAS SHORTED. AHA, A CANDIDATE FOR THE JB BATTERY OVERHAUL PROCEDURE.

I RIGGED UP CLIP LEADS TO AN AUTOMOBILE TWELVE VOLT BATTERY. WITH THE IRON'S BUTTON DEPRESSED, I MOMENTARILY APPLIED THE 12 VOLTS TO THE TIP HOLDERS WITH THE SAME POLARITY AS THE VOLTAGE OBSERVED EARLIER. THE LIGHT BULB EITHER BURNED OUT OR THE CAR BATTERY INSTANTANEOUSLY WENT BAD. (NOPE, IT WAS THE FORMER, INSERT NOTE "REMOVE BULB BEFORE BLASTING IRON").

A TRIP BACK TO THE VOLTMETER VERIFIED SUCCESS OF THE PROCEDURE. AFTER LEAVING THE IRON IN THE CHARGING STAND OVERNIGHT IT WAS USED ON A COUPLE OF PROJECTS AND SEEMED TO WORK OK. (EVEN WITHOUT THE BULB). NOW, IF I CAN FIND A SOURCE OF BULBS FOR PORTABLE SOLDERING IRONS . . . . .  
JOE, K5JB

## BILL'S PUZZLE

LAST MONTH'S C & E CONTAINED A GOOD PUZZLE WHICH LOOKED SOMETHING LIKE THIS:



QUESTION:  
WHAT IS IN THE BOX IF  $I$  IS  
REDUCED APPROXIMATELY TO  
ONE HALF WHEN  $C$  IS ADDED?

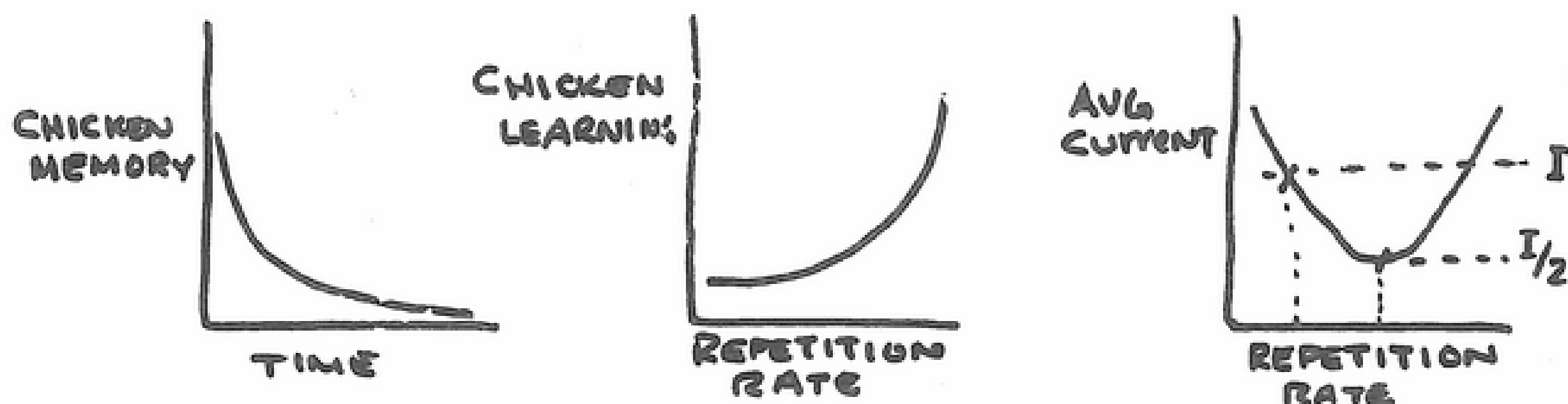
WE RECEIVED SEVERAL POSSIBLE SOLUTIONS AND WHEN BILL, K5KDR WAS ASKED WHAT THE CORRECT ANSWER WAS, HE SAID, " I DUNNO, WHY DO YOU THINK I ASKED?" WELL, BEST I CAN DO IS PUBLISH THE MOST PLAUSIBLE SOLUTIONS AND LET YOU DECIDE WHICH ONE IS BEST.

MAUDIE, K1ICKR, SUGGESTED THE BOX WAS A TRANSISTOR RADIO. HER ROOMATE AT SUNSET PALACE RETIREMENT SPA, GERDIE, HAD A RADIO SHE WAS ALWAYS RUNNING WITH THE VOLUME WIDE OPEN BECAUSE SHE WAS A BIT HARD OF HEARING. THIS ALWAYS IRRITATED MAUDIE, SPECIALLY SINCE HER SX-30 WAS A BIT WEAK ON AUDIO AND THE BC RADIO WAS GIVING WIAW QUITE A BIT OF COMPETITION DURING CODE PROFICIENCY RUN. WHEN GERDIE WAS OUT FOR A STROLL ONE DAY, MAUDIE GOT TO THE TRANNY AND PUT A .05 UF CAPACITOR ACROSS THE VOLUME CONTROL. AT FULL VOLUME THE RADIO WAS NOW DOWN TO A COMFORTABLE ROAR. GERDIE THOUGHT HER HEARING WAS REALLY GOING DOWN THE TUBES NEXT TIME SHE HEARD THE RADIO BUT WITH A SIGH SHE LET GO WITH A COMMENT ABOUT HOW OLD AGE DOES GET TO THE BODY ONCE IN A WHILE.

SOMEWHAT LATER, THE GIRLS NOTED THAT THE RADIO WAS REQUIRING A NEW BATTERY ABOUT EVERY TWO WEEKS RATHER THAN WEEKLY AS IT HAD IN THE PAST. MAUDIE BEING HIP ON THESE THINGS EXPLAINED THAT THE NEW BATTERIES ARE RESULT OF TECHNOLOGICAL BREAKTHROUGHS SPUN-OFF OF THE SPACE PROGRAM. WHAT SHE ACTUALLY FIGURED WAS THAT THE RADIO'S POWER AMPLIFIER STAGE WAS PROBABLY RUNNING CLASS B PUSH PULL AND AT LOWER VOLUME, CURRENT DRAW WAS REDUCED. SHE, THEREFORE, RECOGNIZED SIMILARITY BETWEEN THE PUZZLE AND HER EXPERIENCE WITH GERDIE'S RADIO. WHAT SAY, BILL?

MIKE, N5MS, ELECTRONIC ENGINEER AND PART TIME ATTORNEY, SAID THAT THE BOX CONTAINED A KIRCHOFFS LAW WITH THEVENINS EQUIVALENT CIRCUIT CONTAINING ACTIVE ELEMENTS CHARACTERIZED BY  $S$  PARAMETERS DESCRIBED BY THE EQUATIONS  $E = MC$ ,  $F = MA$  AND PARTIAL DERIVATIVE LOOK AND NODAL EQUATIONS DISPLAYING FERMI PRINCIPLE DIVIDED BY AVAGADRO'S NUMBER. MIKE'S CASE RESTS.

MELVIN GLICK, KPY 10-4, SENT A SOLUTION BUT IT WAS ILLEGIBLE: THE PAPER COVERED WITH LITTLE MARKS THAT LOOKED LIKE CHICKEN TRACKS. OUR EDITOR CONTACTED MELVIN WHO SAID THE BOX LOOKED LIKE A FENCE CHARGER. HE EXPLAINED THAT HE HAS 100 CHICKENS. IN ORDER TO KEEP THEM IN THE YARD, HE PUT UP A FOUR INCH HIGH ELECTRIC FENCE. WELL, CHICKENS ARE PRETTY STUPID, YOU KNOW, AND EVERY TIME THE CHARGER PULSED, ABOUT SIXTY OF THE CHICKENS WOULD BE UP AGAINST THE WIRE AND GET JOLTED. BECAUSE OF POOR MEMORY AND LOW LEARNING ABILITY THE NUMBER OF CHICKENS PER JOLT STABILIZED AT SIXTY. SEE CURVE OF CHICKENS PER JOLT REPETITION RATE.



WELL, MELVIN CALCULATED THE POSSIBLE RESULT OF INCREASING JOLT FREQUENCY BY USING STANDARD CHICKEN MEMORY RETENTION FORMULAE AND USING THE MEMORY CURVE ABOVE, FOUND THE CURRENT CONSUMPTION COULD BE CUT IN HALF IF HE DOUBLED THE REP RATE (SEE CURVE 3). THE NUMBER OF CHICKENS PER JOLT IS NOW ONLY 15. ONE FOURTH AS MANY PULSES IN THE SAME PERIOD REDUCE AVERAGE CURRENT TO ONE HALF THE ORIGINAL VALUE. MELVIN INCREASED THE REP RATE BY ADDING A SINGLE CAPACITOR TO HIS FENCE CHARGER. CLEVER EH, BILL? THAT'S WHAT I CALL GETTING A FOULED UP SITUATION UNDER CONTROL. JOE, K5JB

## Good for a lot of things, but. . .

PLASTIC PIPE is flexible, durable, relatively inexpensive, and easy to work with.

Which is why it's being used more and more for new and replacement water pipe for homes.

But good as plastic pipe is, there's one thing it isn't: It isn't a suitable electrical ground connection for a home's wiring. This is the warning sounded by PG&E safety engineers, and seconded by electrical contractors and city and county building inspectors.

The danger is that homeowners doing their own work, or workmen not familiar with electrical requirements, may unknowingly "ground" domestic wiring to water systems made largely of plastic pipe. (No gas pipe should ever be used for an electrical ground, as it is expressly forbidden by the national electric code.)

The difficulty is that you can't tell just by looking. The part of the water or gas line that emerges from the ground generally is steel, for rigidity. But underground, out of sight, the rest of the line may well be plastic. And plastic will *not* conduct electricity.

If such a connection is made, it creates the potential for fire and/or lethal shock.

Local building inspectors or licensed electrical contractors should be consulted for an approved method of providing an electrical ground. Clif Appel, WB6AWM

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I'm preparing to travel and must sell the following:

YAESU FT-101EE/\$575; PL-2100/\$350; YC-601 Digital Readout/\$150.  
Hornet (Swan) 10/15/20 Beam/\$150; Heath IR-2202 Digital Voltmeter/\$100; B&K 32000 Signal Gen./\$175;  
B&K Tube Checker/\$95; Tektronics 545A Scope w/cart/\$500; Work bench (wired)/\$20; Heath Dummy Load/\$15;  
Operating Desk, Glass, Chair, Lighted shelf/\$75,  
Station Control (Coax switching, VSWR Ind., etc)/\$40,  
Craftsman 3/8" Var. Speed Drill Press/\$50, Shure 520-3L Mike/\$25, Speed Key/\$17.50, 5 Circuit Boards for FT-101 Series/\$50.

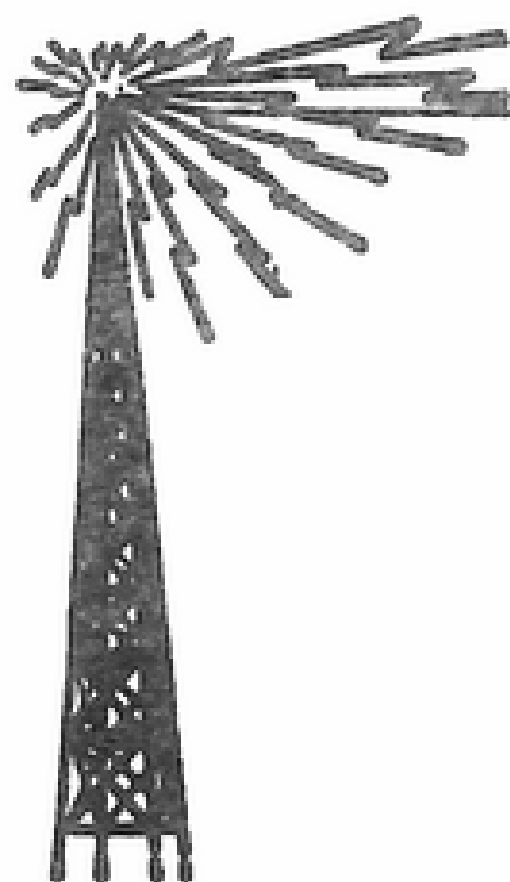
Call Bob McClain at 522-6461 or see at 1815 N. 27th St., Okla. City.

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## Lawton - Ft. Sill Amateur Radio Club, Inc.

### ANNOUNCEMENT

LAWTON-FT. SILL AMATEUR RADIO CLUB 32nd ANNUAL HAMFEST  
MONTEGO BAY MOTEL COMPLEX - April 8th and 9th 1978  
Mars Meetings, Demonstrations, QLF and Novice Contests  
Eye Ball QSO's- Ladies Activities, Sat Night Activities  
COME AND PLAN FOR A WEEKEND OF FUN  
Lawton Hamfest, Box 892, Lawton, Ok 73502



## COVER STORY - NORMAN AMATEUR BUILDS NEW "HAM" RADIO

Our cover for this issue of Collector and Emitter features a recent construction project by Joe Christian K5HMD. Without a doubt, this is one of the niftier "Ham" Radio projects I have seen in recent time. This is a real "pork" barrel project, having something for just about everyone. It is readily constructed from commercially available parts and features simplified construction and tune up.

"I always wanted a 'ham' radio ever since I was just a little kid. I just decided to sit down and build me one," Joe said. "The project was a welcome change from HT's and Motracs. It works just great."

Joe has promised full construction details available by just send-25¢ in coin to Merkle Press. Just ask for the "Pig in a Poke" construction article. Although Joe purchased his parts from Safeway, he indicated that there are several sources that can be utilized and that they are all interchangeable. For further details, visit your local supermarket.

Although very close mouthed about it, rumor has it that Joe has been contacted by an Israeli syndicate about the commercial possibilities of his project. It is anticipated that they can expect a large market in Arkansas where the use of "Ham" radios is expected to top sales of "pig hats" to Porker fans at the University of Arkansas. Squeals of delight greeted the first prototype which was presented to the Basketball team at the recent Arkansas-Houston basketball game. The Governor of Arkansas has offered to trade a "Ham" radio to the Governor of Oklahoma for some of his old worn out brooms.

COVER PHOTO CREDIT-Credit where credit is due (i.e., I still owe him for the photo) goes to R. Brad Hackler of the Backyard Racing Association for our cover photograph. Although not yet licenced, Brad has a keen interest in electronics and can whip up some of the prettiest Printed Circuit layouts you ever saw. His hobbies are roller skating, girl watching and touching up the nose of his Volkswagon.

Micheal Salem N5MS

## DAYTON HAMCONVENTION OR BUST

The symptoms are starting to manifest themselves among several of the local amateur population. Lightheadedness when thinking about the flea market, a certain scratchiness that occurs in the lower posterior region in the approximate region of the wallet and frequent erratic behavior by those amateurs who are married. This includes part of the "ole" paycheck being set aside each month for secret slush funds, discrete inquiries to local airplane rental agencies and phone calls to the air lines and discussions concerning "Super Savers." There are many who are having the family auto re-tired for some 17 hours of driving that will lead to that Nirvana of Amateur Radio, the 1978 Dayton Hamconvention.

Dayton this year should be bigger and better than ever. Last year, an incredible 16,000 amateurs milled around and through the HARA Convention Center ODing on all the amateur radio parphenalia. The flea marketeers lined up five abreast and 16 to 20 deep just to get into the parking lot for the booth setup on Saturday morning. The flea market in full swing stretched across some 40 acres and there is no indication that it will be any less this year. Contrary to some opinion, the Mecca of Amateur Radio is not Newington, but Dayton. It is here that one finds out what being an amateur really is like.



The Dayton Hamvention is scheduled for April 28, 29, & 30 at the HARA Arena in Dayton, Ohio. The convention committee will be mailing out brochures in March to anyone who has attended the Hamvention in the last 3 years. The Committee promises more exhibit and flea market space than before (terrific), new products, technical sessions, ARRL and FCC Forums, other special and group meetings, transmitter hunts and the total value of the prizes exceed \$15,000.00.

Admission is \$3.00 in advance, \$4.00 at the door. Flea Market space is \$5.00 to \$8.00 per space depending on the number of spaces. For special Hotel/Motel rates and reservations you can write: Dayton Hamvention, P.O. Box 44, Dayton, Ohio 45401 or phone (513) 854-4126.

Micheal Salem N5MS

#### REPEATER UNDER CONTROL (MICROPROCESSORWISE)

Roger Ryan WA5JXX reported to me the other day that he has begun to write software and flow charts for a repeater and autopatch controller for WR5AFW in Norman. I don't intend to pass this up, especially when he gets motivated. I did some checking around and we have decided to use the new Intel 8085 microprocessor as a controller and have ordered a chip set which costs about \$125.00 for three chips. We already have a board layout, so when the chips arrive, we'll pour a little of the software into the EPROM and hook it up. Eventually, we will convert the entire system to control by Microprocessor. A conservative estimate of the cost will be about \$250.00. Which brings me to the main point of this discussion, moneywise. Microprocessor chips have come down considerably in price. However, as indicated, this 3 chip set is still over \$100.00. In addition, we will have to purchase an extra EPROM for developmental purposes. Regular club dues and donations cover the costs of our phone lines and maintenance on the equipment. If anyone wants to contribute a little extra to our chip purchase, contact Roger Ryan WA5JXX at 364-6848 or Micheal Salem N5MS at 321-5453 or catch either one on the 28/88 repeater, WR5AFW. We anticipate that the system could be operational in a skeletal fashion within a few weeks after it has been constructed. The 8085 lends itself very well to this type of construction. I will briefly discuss the 8085 structure and operation in a future article of the C & E.

Micheal Salem N5MS

#### CAPACITORS AND CAPACITANCE METERS REVISITED

My Collector & Emitter takes several weeks to travel from OKC to Norman. Amazing, but true. So when I write something for C&E, I usually don't see it again for a couple of weeks since I don't keep any copies. This unintentional help from the Post Office helps me to be more objective about judging what I wrote. It also makes it hard to discuss the article in great detail with someone who saw it when his copy arrives only a few days after C&E is mailed. In any case, I got a nice phone call from Bill Huffman N5CC a couple of weeks ago. It seems that he had read the article concerning the ECD Model 100 Capacitance Meter. He too lamented over the high price (for some users, well worth the price) and pointed out a simpler alternative which I did not list in my article. He's right. I had overlooked a simple method for using a Frequency Counter as a capacitance meter as shown at page 19 of the August 1977 issue of QST. W6ALF presents a simple circuit that cantbe beat for simplicity in measuring capacitors. It takes a 7400 and a NE555, a few resistors, capacitors and a transistor and provides resolution on measurements down to 1 pf. Four leads are

tapped into the counter: +5 Volts (Bill recommends that you use a self-contained +9 Volt Battery as suggested in the article to eliminate 60 Hz pickup, the +5 Volts is for the 7400), a tap to the 1 Mhz point of the time-base chain, and a tap on the count-enable (or clear line). The circuit is cleverly designed around the \$30 Counter Article published in the January 1974 issue of QST.

The circuit uses a NE555 to measure the voltage across the unknown capacitor while being charged through a standard resistor. The circuit is similiar the concept used in the ECD 100 Meter. The time that it takes the capacitor to charge up to 2/3 of the supply voltage is proportional to the capacitance. The number of charge and discharge cycles in a standard period are counted and displayed on the counter. The author presents a fairly detailed technical description which is useful and interesting reading even though you might not want to build the project. Bill reports that the stability is good and the apparent accuracy appears to be good. I have not had time to build up a circuit yet (a couple of late nite sessions kept my HT from becoming a candidate for a broken home), but I intend to shoot a board and build one up soon. It does not have the autoranging features of the ECD Meter or the construction article in Popular Electronics, but its operation is one of simplicity. Bill said that he made a small modification and also can use it as a digital ohmeter. Maybe he will share his modification with us in a future issue of C & E.

Micheal Salem N5MS

#### FREQUENCY COUNTERS-HAM RADIO STYLE

Gosh, I love to play with frequency counters. This started when I was an undergraduate and I talked one of my professors (W5TPJ) into letting me use the EE School's Monsanto Model 1500B Counter to check the frequencies on my old HR-2B. The counter had a hetrodyne unit that took it all the way to 3 Ghz. It was finicky, but once it locked on, it was rock solid. In class, I later used a General Radio counter that had an upper limit of about 500 Khz. It was big, bulky and basically unwanted (by me at least).

I never owned a counter because I could not afford something that could count what I wanted. Finally, about a year and a half ago, I was able to buy a simple 18 Mhz counter at an auction. It had a busted power supply (which a friend of mine promptly fixed (bad bridge)). The counter was not state of the art, used RTL and was very compact, but line operated. Later, at the Dayton Hamvention, I spied a counter that looked like the Monsanto of the EE School. Sure enough, it was. Some judicious bargaining and I carried it away. I obtained a 500 Mhz hetrodyne unit from K5HMD and WA0UVX and found the company that still stocked parts and did some minor repairs. The only setback was a failure in the power supply for the oven that put about 45 volts on a 28 volt oven. It fried it. I had to do a little skrimping to find another oven and I finally was able to obtain a factory oven that was surplus. I finally got the counter operational and it works well with only minor problems every now and then. I installed the following circuit (crowbar) on the power supply and believe me, I checked it a couple of times just to make sure it worked. I don't think that I will be able to get another oven so readily:

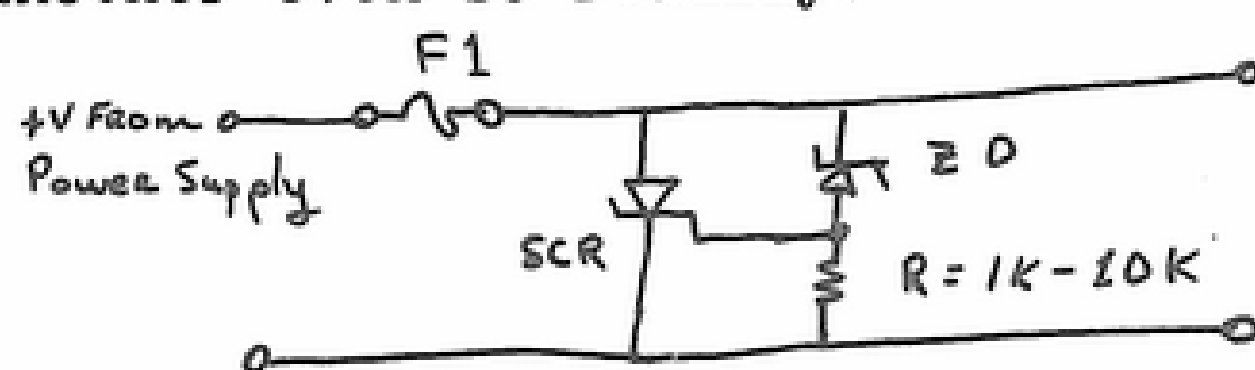


Figure 1.

Crowbar circuit  
To OVEN - If voltage exceeds  $V_{ZO}$  - Zener conducts & turns on SCR, Blowing Fuse. Select F1 for supply & oven.

The counter not only features frequency measurements, but can also

count and totalize events, scale the input, show the ratio between two frequencies and do period averaging.

For a couple of months, I have had an article gestating in the back of mind about frequency counters. With the new LSI chips bringing the complexity of counters down to a reasonable size as well as reducing the physical size, the average amateur should find plenty of uses for a new miniature counter. The construction and cost of a counter is no longer out of reach of the average amateur.

I was pleased to open up a recent issue (February 1978) of ham radio magazine and find that the entire issue featured counter construction articles. The contents vary from an extended article about understanding and using counters to a simple six chip circuit for a 500 Mhz counter that was under the title discussing front ends for counters. The Intersil 7208/7207A CMOS counter chip combination is featured in several articles and is pretty nifty. The 7208 is a 7 decade counter, multiplexer for the display, 7 segment decoder, digit and segment drivers, and all the logic required for blanking, reset, input inhibit, and display on-off all in one! The 7207A is a high stability oscillator and frequency divider that divides a 5.24288 Mhz crystal frequency to obtain the 1 second gate pulse. The 7208 counts up to 7 mhz max and from that point, you let the TTL take over up to 50 Mhz or so. By using a 11C90 (the Fairchild prescaler chip and successor of the 95H90), you have a counter capable of counting to 500 Mhz. And it can be done for less than \$100.00.

Several of the articles feature input circuitry and raising the input to 100 Mhz (p. 26). You can add this directly to your present 30 Mhz counter. Frequency control gets a mild coverage in an article that describes precision temperature control for crystal ovens using the LM3911N temperature controller. If your counter lacks a little in sensitivity, you can add a preamplifier (page 47).

All in all, the issue is must reading for anyone contemplating the construction or purchase of a counter. Next month, I will have that article on frequency counters (I think).

Micheal Salem N5MS

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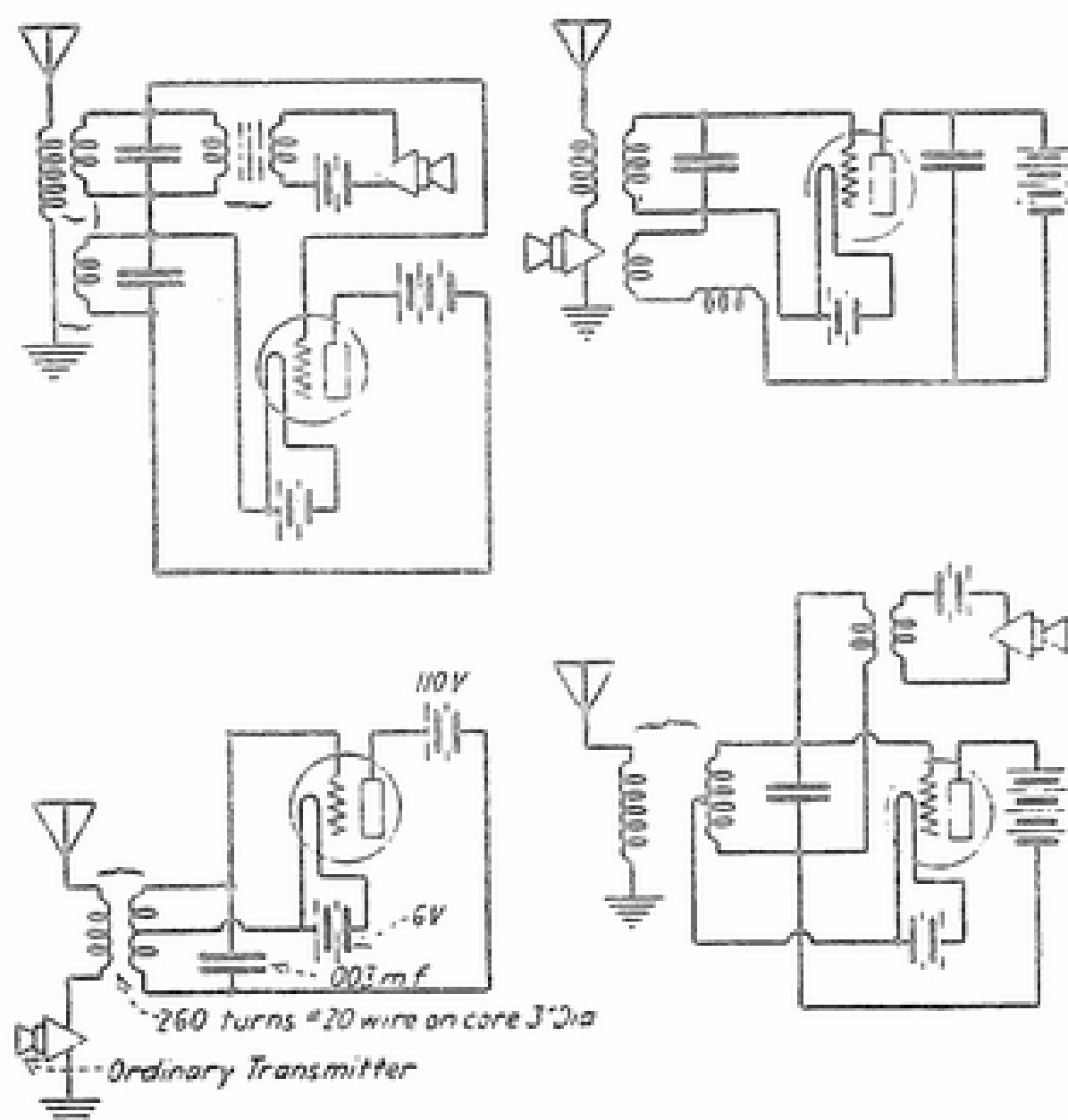
ORDERS TO GO

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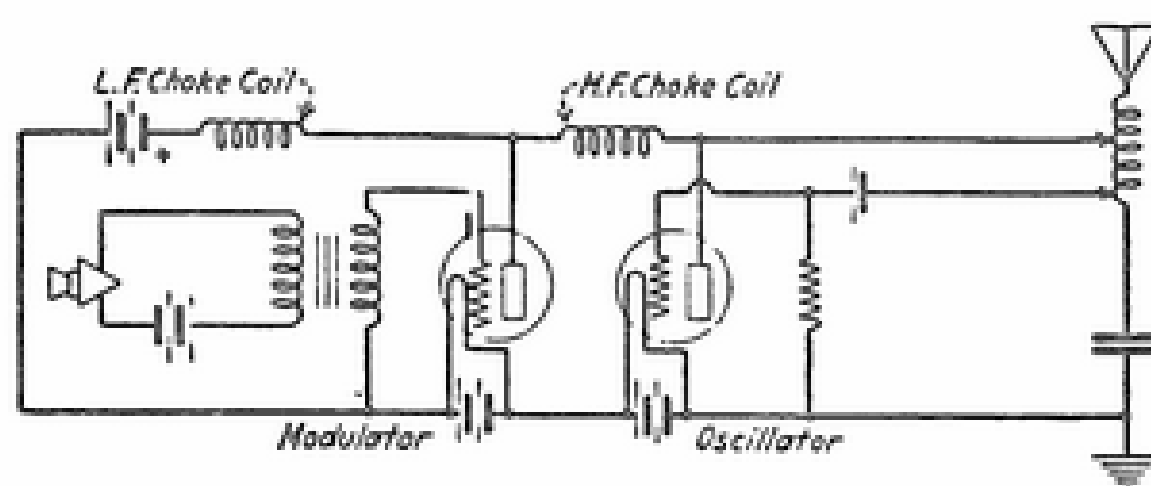
### NOSTALGIA, AGAIN

From Mechanical Appliances and Mechanical Movements, Hiscox, Gardener D., M.E., circa 1923:

989. **RADIOPHONE TRANSMITTING CIRCUITS.** Simple transmitting circuits, using a single tube and grid modulation.



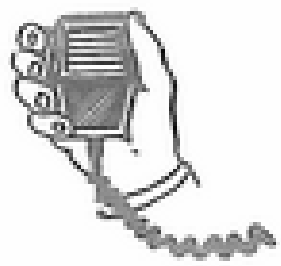
990. **HEISING MODULATION SYSTEM.** This system of modulation is used in U. S. Army transmitters, and in many broad-



casting circuits installed by the Western Electric Company. It is also very popular with amateurs.

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## THE ZANY NEWS FREQUENCY

By JOE, WA5ZNF

IT HAD TO HAPPEN - - Three years ago when we started the Collector and Emitter we had a beautiful setup. I was able to use the office where I "worked" to put the paper together, make negatives and printing plates buy paper at ton lot prices instead of by the ream and then print the magazine for actual material costs (I did all of the labor on my own time) plus a \$10 a month service charge to cover all of the incidental office expenses and small printing jobs.. Things have changed - - the company has gone out of the commercial printing business, some of the equipment has been sold, the addressograph equipment has been replaced by a computer which does the addressing by stick-on labels and the machines have been moved into a storage area which I can still get to - - until it is sold - - to make new plates and address each issue,

- A. We can still use the office for putting the paper together.
- B. Negatives, plates and the printing are being done by a printer in Midwest city for \$13.75 for each 4-page folio, with us furnishing the paper.
- C. I am still addressing them on the adressograph machine, which is soon to be offered for sale.
- D. As of now the collating, stapling & folding can be done as it has been all along.

SC - - Some changes will have to be made before too long. Suggestions are listed below, and in addition I am going to try to make every club meeting in March to let every member in on what is happening and I bet there are enough interested and talented people to help resolve our little problems. Be thinking about the comments below:

- A. Probably no change here, but, if needed it would be no big deal.
- B. Material costs for negatives and plates would easily be covered by \$3.75 of the \$13.75 for printing. We need a ham printer who could cut that labor cost in half or more. I don't know who he is but he must be around. We have a mighty talented and varied fraternity of amateurs.
- C. Big problem coming up in addressing.
  - 1. Hope that no one wants to buy an addressograph machine - That's probably wishful thinking.
  - 2. Pay 2¢ a copy (100% increase) to have stick-on labels furnished each month. Plus some charge for file maintenance each month. Probably programming costs.
  - 3. COPA or one of the clubs invest in a micro computer and make our own labels and perform file maintenance to quit sending C & E to people who don't renew memberships or subscriptions which have expired.With all of the expertise and accesability to parts, components, a printer, etc. we should be able to have not only agood, and in the long run less expensive method of solving C & E's problem but it would make a wonderful club project and then I am sure there would be lots of other interesting uses for it.

■ ■ ■ ■ ■ ■ ■ ■ ■ ■



### REMINDER!

A B I G RED "X" HERE WARNS THAT ACCORDING TO RECORDS FURNISHED BY YOUR CLUB SECRETARY YOU ARE DELINQUENT IN CLUB DUES. NEXT MONTHS CORA COLLECTOR/EMITTER MAY BE THE LAST UNLESS YOU CONTACT THE CLUB INDICATED ON PAGE TWO AND RENEW OR CORRECT THE RECORDS.

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
FLEAS - BOUGHT - SOLD - TRADED - MAR 21			① MEETS 1	2	ACARC MEETS 3	4
5	6	MORI MEETS 7	8	ALTUS MEETS 9	10	11
12	13	14	② MEETS 15	16	VHF MEETS 17	18
19	EDIT CPE 20	OKCAP FLEA MKT. --- 76ers MEET 21	22	23	24	25
26	ACARC MAILS CPE 27	28	29	30	31	

See page 2 and/or individual club sections for details

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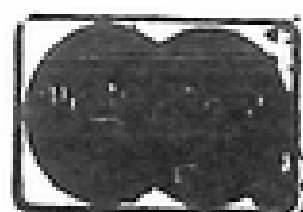
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