

RIVER CITY RADIO RAG



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Deadline for submission of materials is the 20th of the month preceeding the desired month of publication. Any article dealing with any aspect of amateur radio is welcome.

It is not our intent to edit prospective articles, however we reserve the right, out of necessity, to delay publication of an article due to space limitations.

Iowa City Amateur Radio Club Officers
1974

President: Steve Towle KØSVW
Vice-Pres.: Robert Lucas WAØDXZ
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Program Chairman: Mike Nowack WBØHOG

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FROM THE EDITOR

de WAØDXZ

Last month's meeting was a big one, with some important things happening within the club, and a very interesting program presented also! The biggest news is that for the first time in many years, there is a dues raise for members of the ICARC. Dues were previously \$3.00 per year, or 25¢ per meeting. This year, the club has been spending some of its money, on this newsletter, on small club activities, and it was decided by the group that raising the dues to \$6.00 a year was a good way to keep the club solvent. There was some opposition, but as one member pointed out, if you can't afford \$6.00 a year, then you can't afford a radio station anyway. The final vote was 21-3 in favor of raising the dues. We hope that the club will continue its excellent programs and activities.

The program was given by Chuck Fenwick, WØFTM, (you may have heard his cheerful voice on 2 meter FM as WAØVWI) who gave an excellent talk on the considerations and design of a 2 meter repeater/ auto-patch facility. The talk brought up a lot of excellent points for those who plan to design such a system, and was complete with slides and charts explaining the entire system. Thanks to Chuck for the fine talk!

Remember the club picnic coming up July 28th... we will have a 2 meter transmitter hunt before hand, so anyone interested in that contact KØSVW for more info. The picnic will follow, more info elsewhere in this newsletter, or see WØMIE.

IN CASE YOU MISSED IT...

de WNØKBD

In case you missed it, the June meeting was a great success, with much happening. We dispensed with the business meeting, treasurer's report, and a report from the Repeater Committee.

New business included a discussion and a vote on the proposal to raise dues from \$3.00 to \$6.00 a year. A healthy discussion ensued, and when the smoke cleared and the votes were counted, the dues were raised, 21-3.

Bob Bothell mentioned that he would like to see a class for those interested in getting a General Class license. Again, discussion, noting that it had been proposed before, but nothing ever became of it. Finally Bob Lucas volunteered to teach the code, Mike Nowack and Mike Valdez volunteered to give a try at teaching the theory. It isn't known yet when the classes will be held, but we assume later in the summer.

Our program was excellent, with WØFTM, Chuck Fenwick from Cedar Rapids giving an excellent talk on the design and construction of repeater and autopatch systems. His talk was very well done, with slides showing some of the equipment, both inside and out. Members enjoyed it, and learned something from his presentation. Thanks to Chuck for coming down to speak to us.

The meeting broke up about 9:45, with a reminder that WØMIE is in charge of the Picnic July 28th at Scott Church Corner--3 PM, transmitter hunt about 1 PM.

CU There?

ALL YOU EVER WANTED TO KNOW

ABOUT BATTERIES... de KØRLT, Paul

This is the first of several articles that will provide basic information about the types of batteries that are readily available to the general public. Eventually to be included will be comments on the important characteristics and applications of carbon-zinc, mercury, silver oxide, and nickel-cadmium cells. Carbon-zinc will be covered first since they are by far the most common type, are the cheapest per cell, and are the most complicated to understand and to describe with regard to their performance in various applications.

Top of the line carbon-zinc cells are usually advertised as "transistor batteries" (previously sold as heavy duty industrial flashlight batteries that are not available on the retail market). They are intended to provide good service at low discharge currents, will almost always outperform normal "flashlight batteries" when used in flashlight service, and usually have a longer shelf life and are less prone to leaking than normal flashlight batteries. Before proceeding to the details and examples, here is a summary of the information in the following paragraphs. Carbon-zinc cells provide energy through a reaction that cannot be efficiently reversed, i.e., they cannot be recharged with any degree of success. The range of discharge currents over which they perform well is limited at low currents by the "shelf life" and at high currents by the efficiency of the chemical reactions within the cell. Their shelf life is very poor at high temperatures (125°F) and their efficiency is very poor at low temperatures (0°F) thus making them best suited for operation near room temperature. Their short shelf life of 1-4 months suggests that they should not be used in applications where they would be called upon to provide power after long periods (1 yr) of storage at room temperature. Their performance is poorest at high current (1-4 times the

max recommended discharge current) continuous discharge applications, and is best in low current (less than .1 times the max recommended discharge current) applications that fully discharge the cell over a period of time roughly equal to the shelf life. At discharge currents between the above extremes, economical operation is possible provided that the cell is allowed to recuperate between discharge periods. The table below lists the max recommended discharge current for several popular batteries:

Voltage	1.5 v	1.5v	1.5v	9v
Size	AA	C	D	----
Burgess	930	130	230	246
EverReady	1015	1035	1050	222
Max Recom.				
Disch. Current :	25 ma.	80 ma.	150 ma.	8ma.
Hrs to 1 volt cutbfff at contin.				
discharge rate :	100 hrs	205hrs	700 hrs	----

Now for some details and examples. Shelf life is normally defined to be the length of time (from the date of manufacturing) that a cell can be stored at room temperature (70°F) and after which it can still provide 90% of its initial energy content. Although shelf life is not publicized by manufacturers, cell data suggests that numbers in the range of 1-4 months are typical for carbon-zinc cells, which, incidentally, have the shortest shelf life of any of the types preciously mentioned. Degradation during storage is due to loss of cell moisture through evaporation and to wasteful low level chemical reactions that occur continuously, even when no current is being drawn. Storage temperature has a dramatic affect on shelf life. A cell stored at 70°F will have a shelf life of about 3 times that of one stored at 90°F,

and at temperatures of more than 125° F manufacturers suggest that "very rapid deterioration and possible leakage" might occur. As one might expect, storage at lower temperatures os very beneficial to shelf life. As a general rule, storage life can be doubled for every 20°F that the storage temperature is lowered. Temperatures as low as -20°F are not harmful to carbon-zinc cells provided that repeated cycling from low to high temperatures does not occur, and that care is taken to insure that moisture does not condense on the cells, soak the jackets, and thereby cause electrical leakage. To avoid condensation when cells are taken out of cold storage, it is recommended that they remain in their original package until reaching room temperature.

Unfortunately, temperature affects chemical speed in a consistency manner. Low temperatures that slow the reactions causing cell deterioration during storage also slow the reactions that produce current during cell discharge; and high temperatures that speed cell deterioration durin g storage also result in improved high discharge current performance. At temperatures below about -10°F carbon-zinc cells are virtually inoperative unless they have a special low temperature electrolyte. As an example of the low temperature effects: A size D cell discharged continuously by a load that simulates a .5 amp flashlight bulb will reach a cell voltage of .8 volts in about 30 minutes at 0°F, or 75 minutes at 32°F or 145 minutes at 70°F. Operation of carbon-zinc cells at low temperatures is inefficient and uneconomical except at very low current drains, i.e. considerably less than 1/10th the maximum recommended discharge current.

Based on the information in the above paragraphs, it should be clear that carbon-zinc cells are a very poor choice for use in an "emergency" flashlight that is kept in a 120°F glove compartment of a car all summer and is expected to

work at 0°F when called upon to provide light in the middle of an Iowa winter.

Now, let us consider the operation of a carbon-zinc cell at room temperature. The energy available from a cell is strongly dependent upon the discharge current, the operating schedule, and the allowable cutoff voltage. As a carbon-zinc cell is discharged, the terminal voltage (per cell) drops gradually, starting at 1.5 volts and finally reaching the cutoff voltage, i.e. a voltage generally chosen to be between .8 and 1.1 volts, as at which the cell is no longer considered usable for its intended application. Obviously, lower cutoff voltages allow more energy to be extracted from the cell before it is to be considered "dead". With regard to discharge current levels, the carbon-zinc cell's chemical reaction is more efficient at lower current levels. For example, a typical "D" cell, discharged continuously to a cutoff voltage of one volt (1.0 V.) will deliver 3-6 times more total energy to a 10 ma. load than it will to a 300 ma. load before reaching the cutoff voltage. This difference shrinks to a factor of 2 if a .8 volt cutoff voltage is allowed.

The discharge currents, can be separated for simplicity into 3 general ranges: those less than .1 times the maximum recommended, those from .1 to 1.0 times the maximum recommended, and those 1-4 times greater than the maximum recommended discharge current. (Operation at higher currents is likely to be very dissappointing). At discharge currents in the lowest range, the cell efficiency can be maintained at a high level if the cell is given sufficient recuperation time between the periods of discharge. In the highest current range, the efficiency will be down by factors ranging from 1.5 to 8, but the recuperative periods still have a useful effect. For example, a top quality "D" cell will reach a terminal voltage of .8 volts after about 4 hours of continous discharge at .5 amp, or after about 9 hours of .5 amp on a schedule of 2 hours per day.

Because of the complexity of carbon-zinc cell discharge characteristics, and the differences in cell formulations and cell quality, anyone who really desires to know how a given cell will perform in a given application should get a copy of the Eveready, or Burgess "Battery Applications and Engineering Data" handbook.

Before stopping, several miscellaneous items should be mentioned. Manufacturers frequently warn that dead batteries should be discarded immediatly because they might leak. The suggestion has a sound technical motivation. Some, (not all) carbon-zinc cells use the zinc anode to form the case of the cell. During the course of discharge, the zinc case is chemically consumed from the inside out. If too much case is consumed in a certain spot or near a seal, a leak results. It should also be mentioned that there are carbon-zinc cells formulated for numerous special applications. Clock batteries are designed with a particular attention to shelf life and operation at very low currents (less than 1 ma.). At the other extreme are electronic flash batteries that are designed to have a low internal resistance, thus allowing them to produce high currents for short periods of time. The transistor radio battery falls between these two extremes. Each type, when used in its intended application, will out perform the others.

To summarize the most important characteristics of carbon zinc cells, they have poor shelf life at high temperatures, give poor performance at low temperature, and perform worst in high current continuous discharge application. They provide good service where they are operated in low current, near room temperature and discharged over a period that does not exceed 6 months to a year at the most.

de KØRLT

BRAIN TEASER!!

On Friday, April 1, 1898, three new clocks were all set, going at the same time, beginning at 12:00 Noon. At Noon the next day, it was found that clock "A" had kept perfect time, clock "B" had gained one minute, and clock "C" had lost one minute. So... if B&C had not been changed, and all three had kept going at the same rate that they had begun, and they maintained this same rate of progress without stopping, on what date and at what time of day would all three pairs of hands again point at the same time, to 12:00 Noon?

de WBØHOG

The answer to last month's BRAIN TEASER was correctly submitted by WØSML, WNØHUH, KØRLT and his wife, among others. What was the answer? The weights of the bales were 54, 56, 58, 59 and 62 pounds.

Add up each combination of weights and divide by 4 to get 289 pounds, as the weight of the 5 bales together (each one weighed 4 times). Assign letters A, B, C, D, E, to the bales. If A is the lightest, E, the heaviest, the lightest combination (110 lbs) is A&B, the heaviest (121 lbs) D&E. Add these to get 231 lbs, then subtract from 289 to get C as 58 lbs. By subtracting the weights of the others: A 54, B 56, D 59, E 62 lbs. A good problem!

WHO'S WHOM....

de WØMIE

Yes, we have YL's in our club! Doris Delaney, WNØKBD is the gal we're going to tell you about this month.

It's not nice to ask a YL her date of birth, so let's just say Doris was born at an early age near Mount Pleasant, Iowa. Her family, and of course she, soon moved to Washington, Iowa where she traversed through the Washington, Iowa school system. After being graduated from good old Washington High School, Doris attended Brown's Business College (Here in Iowa City?), which, after graduating her, soon became defunct. (I guess it had served it's purpose in the world).

Still having a quest and thirst for knowledge, Doris attended the University of Iowa, obtaining her liberal arts degree. Doris

Doris served her vountry well in WWII, in the inspection department of the Burlington Ordinance Plant. After the war, Doris was married, and has five children, ranging in age from 17-27 years. Tom, the youngest, is in school at Iowa City High.

Doris is currently account coordinator at the firm of Riepe, Buchanan and Piper, insurance consultants. Doris says that "quite a few" of the members of her family have been interested in ham radio but she is the only one that tackled the code and won. She was licensed in the Spring of 1973, and is now working on her General License. Doris is partial to the Drake gear, having a 2C receiver and a 2NT transmitter. Look for her on 40 CW, as I am sure she would enjoy the code practice!

de WØMIE

FIELD DAY 1974

These photos are from the site of the KØSVW group. We tried to get some from the WØJV group but none were available. We will be glad to run some of WØJV next time if we can get any. Photos may not reproduce well, so this is an experiment!



Above: KØSVW, KØHLB and a visitor, Ernie, work on one of the antennas.
Below: Again, SVW and HLB torching some connections.



FD FROM KØSVW/Ø

This year there were two groups operating field day from Iowa City, first, the ICARC, WØJV and also, our group, KØSVW. Our site was west of Iowa City, near Oxford, on a farm sitting high on a hill, overlooking a beautiful valley of grazing cows.

Friday we began putting up the antennas, using a sling-shot to shoot monofilament line through the trees, then following it with nylon cord. We put up an 80 and a 40 meter dipole this way, at about 35 feet, maybe a bit higher.

The big guns were the homebrew quad, 2 elements on 20, built in Davenport by KØOAM, one of our group. John hauled it to the site, put it together, and we somehow managed to get it onto a 30 foot pushup pole. That was just the beginning. The thing didn't want to go up into the air, and we ended up with the quad about 15-20 feet off the ground! There has to be an easier way! The other big gun was a ZL-Special, a 2 element 40 meter beam, 67 feet long, each element spaced 16 feet from the other. This was raised to a height of about 40 feet, but we didn't get that one up in the air until Sunday A.M.! Wish we had it up earlier.

Rig was a Drake TR4-C, used entirely on SSB and CW. It held up well, no other rig was used. KØUJJ had donated his super keyer, and we programmed it to call CQ, sign our call, then we waited, heard a station, sent his call once and pushed another button, the keyer took over, sent him a report. We got his report, pushed another button, and it went QSL QRZ de KØSVW FD K. What a machine Craig! We worked about 750 QSO's, using the one rig and 4 operators/loggers/go-fers. Maybe more next time on the antennas and some problems we had. 73, KØSVW, KØHLB KØOAM and WAØDXZ

REPEATER NEWS

de KØØBU

In past articles, we have considered the advantages of FM and Repeaters. This article will deal with a bit about the Iowa City Repeater and its equipment and operation.

The repeater is located in the U. of Iowa Physics Building, in downtown Iowa City. The antenna is on the top of a sixty foot tower, which is on top of the building itself. It is a Ringo antenna, made by Cushcraft. The Repeater Association has purchased an extension kit for the Ringo, which will convert it to a 4.5 dB gain antenna system. There is more to do; we have also received new feedline to put into the system; 130 feet of 7/8 inch heliax! To give you some idea of why we are going to use the heliax, it has a loss at 144 mhz of only 1/2 dB per hundred feet. Compare this to the loss of RG/8, and you will see why we are happy to have the new heliax!

The equipment itself is a Motorola Base Station, model 80D. Audio from the receiver is fed to the transmitter, and the squelch of the receiver is used to operate the PTT on the transmitter. The receiver is tuned to 146.28 mhz., so when there is a carrier on 146.28, the squelch opens, turns on the transmitter, which puts out the signal you hear in your base/mobile rig, at 146.88 mhz. If you wish to use the repeater, simply transmit on 146.28, and listen on 146.88.

We have a new transmitter ready to go soon, a GE Progline, which will run about 30 watts. Currently, the 80D is only pushing out about 9-12 watts. A so planned is a new autopatch system, so that we may make telephone calls from our cars, or base stations, through the repeater.

de KØØBU

HELP WITH THE GENERAL CLASS TEST !!

One thing that came out of the last club meeting was that we now have a definite possibility of having classes for those interested in getting their General Class License! Novices and others have asked for help for months, but until now, no one wanted to undertake the job. Bob Bothell brought the subject up again at the meeting last month, and must have shamed some people into volunteering, for soon three or four members volunteered to help begin a class. Mike, WBØHOG will work with Mike Valdez, (an ex-OA South American) operator in conducting the theory part of the course, while Bob, WAØDXZ will make an attempt at teaching the code, something that seems to hold back quite a few in that jump from Novice to General. The code will be taught in a number of ways, using pre-recorded tapes, live transmissions in the room, recommended listening to WIAW, and with the use of KØUJJ's computer tapes, we should be able to try quite a few ways of teaching that code!

It hasn't been decided when the classes will begin, but it is thought that we might wait until late August, when everyone is back from vacation. Anyone who is interested in taking the course should contact Bob, WAØDXZ 351-1488 or Mike Nowak, WBØHOG, at 679-2411 (at free call from Iowa City). Any suggestions from the membership for teaching the class, or meeting times, etc. would be appreciated. We already have about 6 people who have expressed interest, and can (hopefully) handle more.

** STRAYS **

DX'ers !! Kingman Reef is on the air! KP6KR has landed on Kingman Reef, and is now operating from there, and will be counted as a completely NEW country for DXCC purposes. He has been heard on 14.203 SSB, listening on 14.220-14.260. Don't call on his frequency!! QSL via W6WX PO Box 717 Oakland, Calif.

Next major Amateur /FCC hassle may well be over traffic handling on the amateur bands. Rules interpretation has been growing more and more restrictive--E.G. the Eyebank case-- and some hams have become so paranoid about it that they are afraid to mention a piece of gear they have for sale on the air, or as someone on 2 meters to help them find a motel room!

Detailed LOG KEEPING for hams would no longer be required if a Petition for Rulesmaking filed by the Maryland FM Association is successful. Petition points out that minimal logging is required for most services, and many operating circumstances make it difficult for an amateur to comply with current amateur requirements. The concept of minimal logging would be an interesting one, and should have large ham support.

Tnx to HR Report for some info used in this newsletter.

FIELD DAY

de KØOBU

Well, 1974 Field Day has gone and passed. It actually turned out very well, inspite of the weather (thundershowers and high wind on Thursday and Friday, beautiful weather on Saturday and Sunday!) The Iowa City Amateur Radio Club held FD activities at Scott's Church Corner, about six miles East on Highway 6. A few antennas and a tent were set up Friday evening, and the rain and wind were really bad! Things were questionable even Saturday morning, so we moved things into the Johnson County Civil Defense Van, which was nice and dry. It was about 10 feet by 8 feet inside, which gave us room for everyone. About 1200 contacts were made with two stations. A TX1 and 75A4 were used on CW part of the time, and a Swan 350 was used partly on CW, and mostly on SSB. We also had a Tempo One (FT200) which we used on SSB at times.

We operated on 75 SSB, 40 SSB, 40 CW, 20 CW and 15 SSB. Antennas were a TH-4 Triband Beam lent to us by Dave Christ, on a tower lent by WBØHOG that was up about 40 feet. We also had a dipole up, which we used for 80 and 40.

Many thanks to all who helped, and special thanks to Mike, WBØHOG, Dave, KØLUM, Steve, WBØHUR, Steve, WBØKBA, Dennis WBØMCX, Fred, WAØHFW, Rick, WAØUVG, Mike, WNØNCX and our club trustee, Gordon, WØAYH.

de Chuck, KØOBU

** STRAYS **

FOR SALE : Stereo Tapedeck; Allied, two matched mic's, splicer, head demagnetizer, 35 tapes. Package deal only. \$150.00 KØUJJ Craig Fastenow 351-8258

FOR SALE : Regency HR2A 2 meter transceiver with pre-amp, crystals for 94/94/ , 28/88, 52/52, 34/94, 16/76, 64 Receive, 46/46, with 12v and 110v. Power Supply, microphone. \$160 Also two 11 element Cushcraft Beams, harnesses, etc. \$35. Will consider trade for 20 meter beam or tribander? WAØDXZ Bob Lucas 351-1488 PS.: Looking for a keyer also.

FOR SALE : Brand new FT-101B transceiver with fan, CW filter, 160 meter xtal, CB sxtal, plus FV-101 outboard VFO , plus FP-101 Speaker/Patch Console. All new, original cartons. KØSVW Steve Towle 338-7255

WBØKBA was heard on recently with a new Regency Handi-Talkie , for 2 meter FM. Should be a fun rig!

**

The current club DX- Contest is underway, with a set of DX Callbooks as the grand prize. Remember, let KØHLB know who and how many countries you worked between June 1 and Aug. 31. Only limit-- you must run barefoot, no linears!

**

THEN! In September, we plan a W.A.S. Contest? Any ideas for rules, or prizes? A key? Mike? Callbook? Magazine subscription? Next years dues paid?

** STRAYS **

KØCKX , Gene, has some beams for sale:
One 3 element 15 meter , one 3 element 10 meter, and one 3 element 20 meter beam, all Hy-Gain beams, price is nice.
Gene Weiner 511 5th St. Coralville, IA

An Iowa City Ham, Dr. A. Sahs, recently retired as Dept. of Neurology, University Hospital, Head Physician. Hope he gets on the air some, as he is reputed to be quite a CW operator.

DX'ers: Effective June 1, 1974, both Tibet and S Zanzibar will be deleted from the ARRL countries list. Tibet contacts will be credited toward China, and Zanzibar towards Tanzania (5H3).

There was a 3rd station operating in Johnson County during the 1974 FD activities. It was located in the Reservoir area, and was run by a Cedar Rapids group, and worked by WØJV.

Is John Knott still active in amateur radio in the area?

**** STRAYS****

Anyone knowing anything about mobile ignition problems on HF is invited to see the Editor about an article, or Mike Nowack about giving a program at the club meeting. WØLFF maybe?

Next Month! Another cartoon by the famous KØUJJ. It was scheduled for this month, but things got out of hand, so we'll run it next month. Who will the victim be?

Aldo next month: An article from WØLFF, which was supposed to go in this time, but WAØDXZ lost it somewhere in the ruins of his shack. It's up there somewhere. I'll find it. Sorry Max.

73 Magazine is looking for a Novice Column Editor. Nice job for someone who knows something about the life of Novices. They pay real money, and the work is reputed to be fairly easy. Anyone in I.C. interested? See Wayne Green c/o 73 Magazine, Peterborough, New Hampshire. Be famous!

UPCOMING EVENTS

July 10--- Iowa City ARC Meeting 7:30 PM CDT
First National Bank, Towncrest. Program will be Mike Nowack with slides of the Lompoc, Calif HAWKEYE satellite launch, and a quickie on transmitter hunting for the picnic.

July 28-- ICARC Picnic! Held at Scott's Church Corner, S.E. of Iowa City on Highway Six. WØMIE Chairman. Bring a covered dish, and the family for an afternoon of fun with friends. Transmitter hunt to begin a couple of hours earlier, about 1:00 PM, Picnic about 3:00 PM

August 14--- August Meeting ICARC

STRAYS

A lot of moving around going on in town... Mike Nowack, WBØHOG to east Iowa City, and WBØKBA a couple miles east of town (RR#5) on Rochester Avenue. (Rumored to have an excellent spot for VHF antennas). Johnnie, KØHLB to a good spot too, in North Iowa City. Did TVI complaints drive all these people away from their former homes? Sounds suspicious.

New members: Tim Edberg WNØHUH RR#2 Box 272
Iowa City 338-8132 Junior at West High.

The following letter was received from the ARRL
June 11, 1974 addressed to members of the Iowa
City Amateur Radio Club :

"Thanks for sending the copy of
your "River City Radio Rag". The
layout and printing quality is second to none
none among club bulletins we've seen.
As an active affiliated club, you
get our affiliated club bulletin , how
about sending us a copy of your bulletin
each month in return? Certainly will
enjoy reading them, and I'll pass them
along to our Iowa representative
(ex-WØDRE) on the staff here. "

73,

Jim Cain, WA1STN
Communications Ass't.
Affiliated Clubs

ED. NOTE:

I think that the club, and all who have
contributed articles, time, and effort to the RAG
can be quite proud of this letter, and thanks to the
ARRL for taking the time to write.