

# VOX



## HUNTSVILLE AMATEUR RADIO CLUB

Huntsville, Alabama

Volume 42, Number 5

May, 2002

### Huntsville Amateur Radio Club Information

#### Club Officers:

President,

Chris Reed, KF4MMF  
creed@hiwaay.net

Vice President,

Tom Duncan, KG4CUY  
Duncant1@ds-s.com

Secretary,

Scott Worsham, W4SSW  
emofficer@knology.net

Treasurer,

Heath Thorson, KC4HRX, 722-0250  
heath.thorson@home.com

The club's address is Box 423, Huntsville, Ala. 35804. Meetings are held each Friday night at 7:30 P.M. at the American Red Cross Building, 1101 Washington Street. Dues are \$12.00 per year, family memberships are \$15.00 per year. The club maintains a Web Site at "http://www.harc.net"

The North Alabama Repeater Association operates repeaters on 146.34 / 146.94, 147.78 / 147.18, 223.34 / 224.94 and 448.5 / 443.5. NARA dues are \$16.00 per year and may be sent to NARA at P.O. Box 18941 Huntsville, AL 35804-8941.

The club's packet radio interest group, HUNTSPAC, maintains an extensive packet network for the Huntsville area. Dues for use of this network are \$15.00 per year, and can be paid through the HARC Secretary-Treasurer listed above.

The club's ATV special interest group, TVATV operates an ATV repeater. It's input frequency is 439.25 MHz and its output is 421.25 MHz. A voice coordination repeater is operated with output frequency of 145.33 MHz, input 600 kHz down.

The Vox is published the third Friday of each month except for August. Editor of the Vox is Frank Emens, W4HFU, 3714 Lakewood Circle, Huntsville, Ala. 35811 or femens@hiwaay.net. Material of interest to the HARC membership should be submitted to the editor by the second Friday of the month of publication.

"Vox", Vol 42, Nr 5, May, 2002  
A Newsletter published monthly except for August by the Huntsville Amateur Radio Club, P.O. Box 423, Huntsville, AL

### From The Prez

Greetings fellow HARC members! The presidential address this month is chock full of upcoming events so hang on tight. May is the month for the election process in HARC. As I pen this article, a nomination committee is in the formation process. Do you have a strong interest in Amateur activities in the Huntsville Area and have a desire to be a leader? HARC wants you to step forward and run for office. Thanks to Dick Curtis, W1TV for helping with HARC 50th birthday celebration. Hope you were able to attend the trip down memory lane for a look back in our club's history. Also, I would like to thank Peggy Bell K4EGB and Steve Bell KD4TFN for preparing some great food and refreshments. Special thanks to Charlie Fisk, WA9TOC for contributing enlarged pictures and display board with information on the early history of HARC. I appreciate everyone's effort in making this a great program.

The Cotton Row Run is held each Memorial Day and HARC has always supported the Huntsville Track Club at this event. HARC provides communications with the Start-Finish line to relay the lead runner information as well as requests for medical support should a runner get injured along the course. An update and more information will be given at an upcoming HARC meeting by Leigh Bartlow, WD4CPF.

May is also the month HARC members must select Ham of the Year. This is an amateur radio operator has served the amateur community in an outstanding fashion. Nominations must be submitted in writing by the nominating member no later than Friday, March 24 to a HARC officer. The winner will be selected among the nominated entries and presented with a plaque prior to the installation of officers during the first HARC meeting in June.

Looking ahead to June... Field Day is just around the corner. K4BFT is always

a contender in the contest that tests our emergency communication skills. HARC needs your continued participation to make this year's event even more fun. If you have never participated in Field Day then you are missing out. Stay tuned for more details.

As the presidential pen is running dry, I will throw in one last bit of information to close out this month's column. The HARC Van now has insurance coverage. The members voted to insure the van with State Farm which had the best quote for the coverage requested by the membership. The agent is Sonny Batchelor, WA4OOM, a former HARC president in the late 70's. Beautiful weather and Daylight Saving Time in effect means a work party is in the future to get things rolling. Pun intended!

73, Chris Reed, KF4MMF

### From the Veep

Thanks to all who have participated in recent programs. Way back in March, Carol Blair's hummingbird show provided interesting insight into these energetic creatures — complete with vintage Dick Curtis video.

Corry Smith's PSK31 program last year got me started in that mode; the

### CAVEC Amateur Radio License Exams

Exam sessions are held the first Saturday of each month unless a holiday causes the session to be delayed for one week.

Upcoming sessions are:  
Saturday, May 4  
Saturday, June 1

For information contact:

Larry Frost, KR4GU, 536-9154  
KR4GU@bellsouth.net

Or

Don Tunstill, W4NO, 536-3904  
dtunstil@hiwaay.net

most recent program has me trying out QPSK, and if I'm not careful, I'll be headed straight for Hellschreiber (maybe even SSTV). Thanks too for donning the raiment of authority and wielding the gavel at a very successful auction. May is another five-friday month, if there's anything left to sell!

The "live on-line" APRS program from Satellite Tim Cunningham showed the system in actual operation - thanks also to those who sent Tim messages during the program to bolster our faith that it's not smoke an mirrors. Tim is on tap for another program soon - check your calendar.

Finally, John Morris' "Mechanical Universe and Beyond" tapes continue to remind many of us how much we've forgotten, or never really knew in the first place! You can see what's on these half-hour videos at [www.pbs.org/als/mech\\_univ2/mech2descrip.htm#descriptions](http://www.pbs.org/als/mech_univ2/mech2descrip.htm#descriptions). The next one is #139, Maxwell's Equations. An interesting adjunct is Georgia State's HyperPhysics at [hyperphysics.phy-astr.gsu.edu/hbase/hph.html](http://hyperphysics.phy-astr.gsu.edu/hbase/hph.html). Many of the topics parallel those on John's tapes, and come with on-line calculators to reinforce your intuition for these processes.

See you at the HARC 50th Birthday Party!

*73, Tom Duncan, KG4CUY*

### The Junkyard Computer Project

Greetings all! It takes two things for something to be created... the idea, and an opportunity. Most times those things don't happen at the same time, but once in a great while they

do. That being said, let me assure you this was NOT my idea! That credit goes to Greg, KF4PNK. I needed help one evening debugging a bad network connection here at the house. He said he would bring over a "portable" computer to figure out what the problem was. I naturally assumed it would be a laptop. Nope. It was the cheesiest PC I ever saw; piece-parts mounted to a hunk of 12" X 20" X 3/4" plywood. Everything anchored down with wood-screws and metal brackets. After I stopped laughing, my second thought was COOL! My first

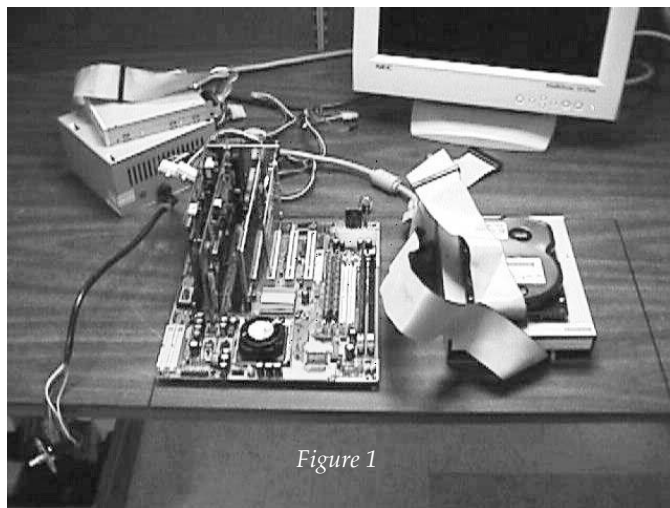


Figure 1

HARC ACTIVITY CALENDAR FOR May, 2002						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29 Christian Fellowship Net 2100 on 145.33	30 ATV Net 2000 Check In 145.33	1 Southeast Linked Repeater Net1900 on 147.240	2 EMERGENCY NET on 34/94 @ 1930 Skywarn Net on 147.24 @ 2000	3 HARC Meeting John Morris Video on Maxwell's Equations	4 CAVEC Exams, Red Cross Bldg, 0900  B'ham Hamfest & AL State Convention
5 B'ham Hamfest & AL State Convention	6 Christian Fellowship Net 2100 on 145.33	7 ATV Net 2000 Check In 145.33	8 Southeast Linked Repeater Net1900 on 147.240	9 EMERGENCY NET on 34/94 @ 1930 Skywarn Net on 147.24 @ 2000	10 HARC Meeting John Morris on Field Day Preparation	11
12	13 Christian Fellowship Net 2100 on 145.33	14 ATV Net 2000 Check In 145.33	15 Southeast Linked Repeater Net1900 on 147.240	16 EMERGENCY NET on 34/94 @ 1930 Skywarn Net on 147.24 @ 2000	17 HARC Meeting Vox and Social Night	18
19	20 Christian Fellowship Net 2100 on 145.33	21 ATV Net 2000 Check In 145.33	22 Southeast Linked Repeater Net1900 on 147.240	23 EMERGENCY NET on 34/94 @ 1930 Skywarn Net on 147.24 @ 2000	24 HARC Meeting Tim Cunningham, N8DEU on Kenwood D700	25
26	27 Christian Fellowship Net 2100 on 145.33	28 ATV Net 2000 Check In 145.33	29 Southeast Linked Repeater Net1900 on 147.240	30 EMERGENCY NET on 34/94 @ 1930 Skywarn Net on 147.24 @ 2000	31 HARC Meeting Fifth Friday, Auction Night	1 CAVEC Exams, Red Cross Bldg, 0900

# GigaParts®

[www.gigaparts.com](http://www.gigaparts.com)

**Huntsville's Only Amateur Radio Store**

Visit our  
new web  
page for  
updated  
pricing!



hy-gain.














Lowest prices, best service!

4925 University Drive # 140                      (256) 535-4442  
The Gallery Shopping Center                      10 - 7 Mon-Sat, 1 - 4 Sun

Come see us next to Chili's!

thought was that enduring MCSE certification probably brings a person to the edge of insanity. So that was the idea.

Fortunately, the opportunity came along only a few days later whilst going for a stroll at the workplace during lunch. I found myself downstairs in the production area, where lo and behold there was a huge pile of stuff marked SCRAP. I asked the line-tech if all this was really being thrown out. He said "help yourself". So I did. And then this project really kinda got out of hand when I decided to build this portable PC with the stipulation that it would be done

"on-the-cheap". As in...\$0 spent. And so now the project is finished, and I came in under budget. For your amusement (and probably to our editor's dismay) I've included 6 pictures of the project. Apologies for the picture-quality; I used a first-generation Sony Mavica. I trust Frank can do something with them ;-)

Figure 1: All the piece-parts needed for project. You may notice a black line on the table. Greg had graciously donated the plywood used in his PC after his girlfriend made him take the thing apart in an attempt to "de-uglify" the house. In this

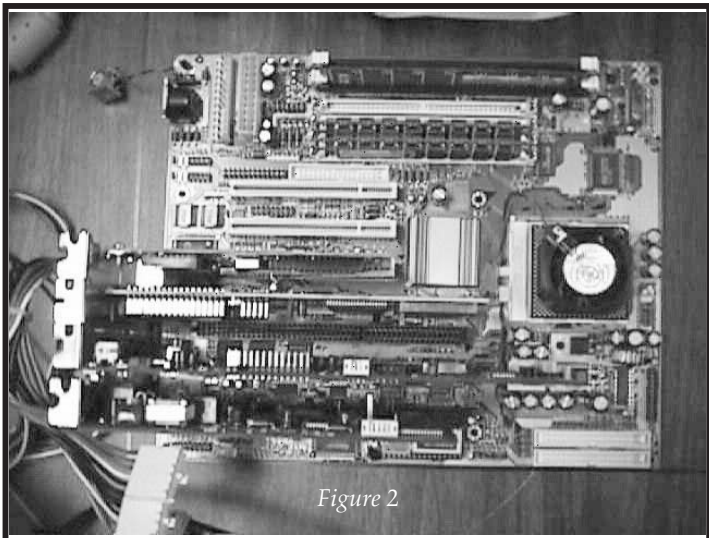


Figure 2

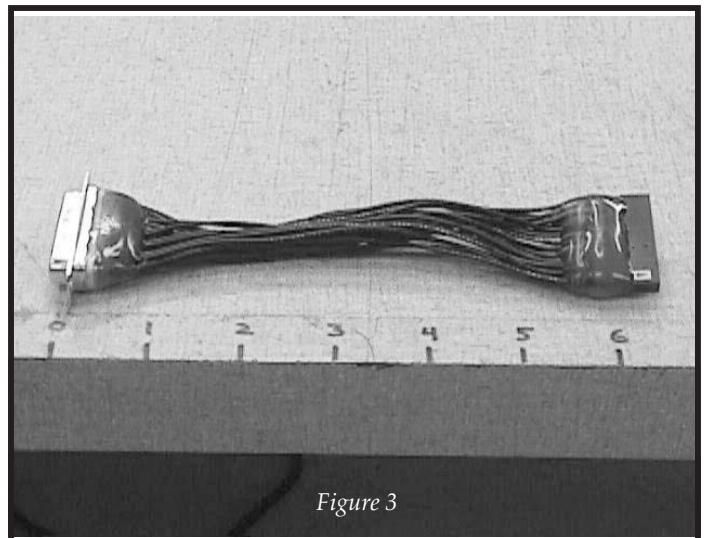


Figure 3

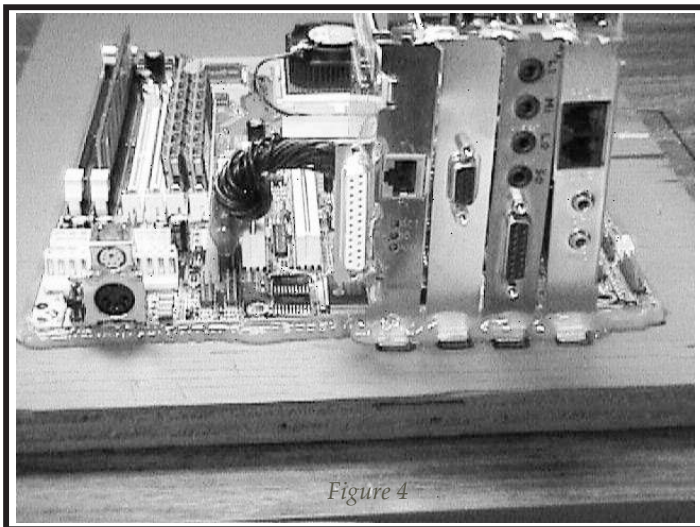


Figure 4

picture, I'm trying to decide where to mount everything. Here we have the 40X CD-ROM which was tossed out because it "made a funny noise". The 3.5GB hard drive was salvaged from my old 486 as was the sound-card and the v.90 modem. The 10/100 ethernet card and VGA card came from the scrap pile as did the 230W power supply. The memory (196MB) and the IDE cables were salvaged from the recycle-bin in the lab. The parts end up there when any of the 100+ PCs are scrapped out due to bad motherboards. The CPU is a 200MHz Pentium with MMX and integrated fan/heatsink. The motherboard is an Elpina with no documentation but info was available on the web. It was scrapped because the CMOS battery was dead. No problem there! The nice thing about the mobo is that it accepts old and new style memory sticks, and also old or new power supply connectors.

Figure 2: Detail of the mobo.....notice the gold-colored heatsink (well, it was gold before it got printed in black & white). This was one of the first boards with the chipset on a single chip. The board has built-in on-board controllers for everything, but it was a bit of a trick to determine the pinouts for some of the connectors. When web info was not available, I had to drag out the scope and DMM to figure out what pin did what. The PS/2 mouse connector (dangling from the up-

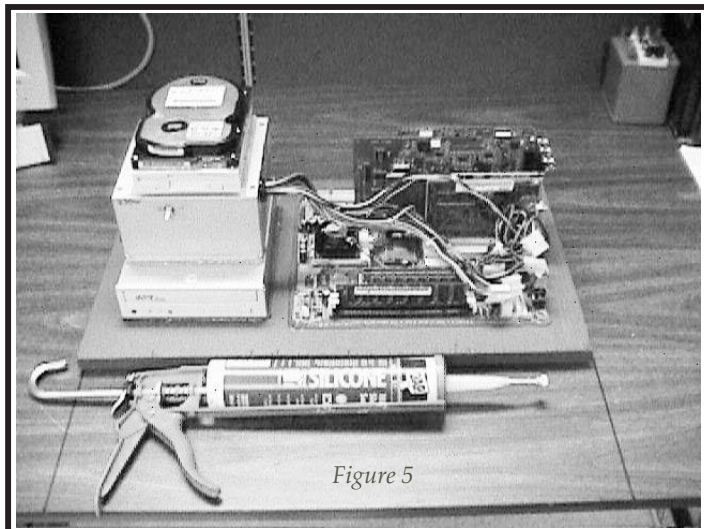


Figure 5

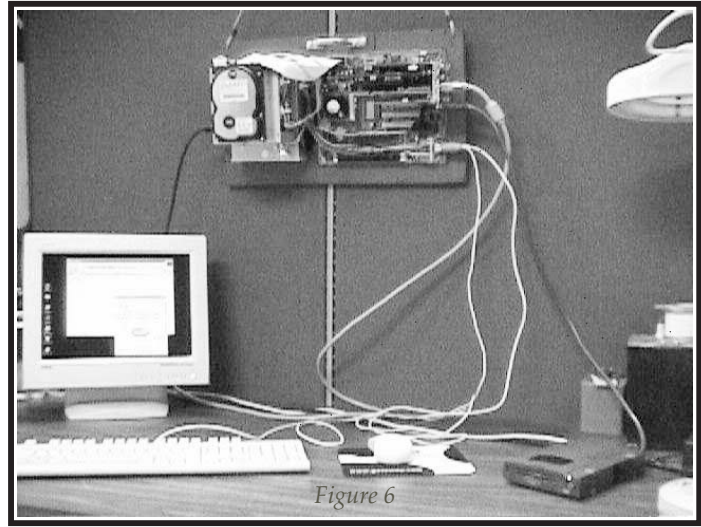


Figure 6

per-left of the board) was fairly simple...only 4 lines are used: power, ground, clock, and data. The LPT1 printer port was a bit tougher; 25 pins to decipher. But each pin only has 3 possible states: high, low, or toggling with data. Simple matter to monitor each pin with the scope during bootup and then consulting the holy book of standards.

Figure 3: Detail of home-brew LPT1 interface cable. No, it's not a six-foot cable! The benchmarks on my bench denote inches. Notice the generous amounts of hot-melt glue for strain-relief.

Speaking of strain-relief....lotsa fun playing with the hot-melt glue gun to relief stress. Kinda like honey on a spoon...the only way to keep it from dripping is to keep turning it. Lesson learned: Hot-melt can take any shape you want as long as you have a heat-gun and freeze-spray handy. Oh yeah, also you must keep turning the cable. Reminded me of being in kindergarten...."have fun with the glue, but don't make a mess".

Figure 4: Here we see the motherboard gooped down to the board. Happened to have 16oz of silicone-seal on hand. Thought it

# meineke®

## Discount Mufflers

### Discount Card

The bearer of this ad is a member of the Amateur Radio community of Huntsville and is entitled to a \$10.00 discount on all services performed by Meineke Discount Mufflers, 10033 South Memorial Parkway, Huntsville, AL, (256)882-0365

"At MEINEKE, you'll get a lot...but you're not going to pay a lot!"

was a much cheesier approach than brackets and screws. Also the board was painted with a can of rustoleum primer. Why? because it was there! The LPT1 connector is conveniently soldered to the nearest available hunk of metal. Future upgrade will include COM and USB ports.

Figure 5: The other stuff gooped down, and the "goopage" used. So you might ask yourself..."how would I go about removing a component should it fail"? Glad you asked. All it takes is 2 pairs of vise-grips and a rusty guitar-string fashioned into a bandsaw. The largest un-wound string on a guitar is the ideal tool of choice. That would be your G-string! (no comment)

Figure 6: The finished product. The IDE cables are routed with an art called "cable origami". Amazing how IDE cables can be folded/routed with a small bench-vise and lots of super-glue! The board is outfitted with a 4' piece of CAT-5 cable for wall-hanging purposes, and rubber feet for table-top use (and for using CD-ROM). The finishing touch is a metal fence-handle (circa 1960) for lifting the thing.

Conclusion: Any kind of "art" needs certain conditions to become reality. First is the idea. Second is the materials. Third is the determination. Fourth is an incredible amount of spare time on your hands during lunch at work. And lastly, the art of art is only fun if it costs nothing but time.

73, Chris WB4UFQ

## The Giggle Box

Happy Birthday To Everyone Who Was Born In May!!

I hope ev-eryone is ready for summer. I am ready for a fresh tomato sandwich. I have my tomato and pepper plants out already, do you? I'm not ready for the hot weather, but it seems to come with summer around here. I'm also looking forward to Field Day. As far as I know, we are still having one somewhere. You'll find details on Field Day in the Vox soon.

### A Joke or Two

A woman went down to the Welfare Office to get aid. The office worker asked her, "How many children do you have?"

"Ten," she replied.

"What are their names?" he asked.

"LeRoy, LeRoy, LeRoy, LeRoy, LeRoy, LeRoy, LeRoy, LeRoy, LeRoy, LeRoy, and LeRoy," she answered.

"They're all named LeRoy?" he asked  
"What if you want them to come in from playing outside?"

"Oh, that's easy," she said. "I just call 'LeRoy,' and they all come running in."

"And, if you want them to come to the table for dinner?"

"I just say, 'LeRoy, come eat your dinner'," she answered.

"But what if you just want ONE of them to do something?" he asked.

"Oh, that's easy," she said. "I just use their last name!"

\*\*\*

A drunk walks into a bar and says to the bartender, "Bartender, buy everyone in the house a drink, pour yourself one, and give me the bill." So, the bartender does just that and hands the man a bill for \$57.00.

The drunk says, "I haven't got it." The bartender slaps the guy around a few times then throws him out into the street.

The very next day the same drunk walks into the bar and once again says, "Bartender, buy everyone in the house a drink, pour yourself one, and give me the bill." The bartender looks at the guy and figures to himself that he can't possibly be stupid enough to pull the same trick twice, so he gives him the benefit of the doubt, pours a round of drinks for the house, has a drink himself and hands the drunk a bill for \$67.00.

The drunk says, "I haven't got it." The bartender can't believe it. He picks the guy up, beats the living daylights out of him, then throws him out into the street. The next day the same drunk walks back into the same bar and says, "Bartender, buy every one in the house a drink, give me the bill. In disgust, the bartender says, "What, no drink for me this time?" The drunk replies, "You? No way! You get too violent when you drink."

\*\*\*

A middle aged woman was driving through a school zone when a policeman pulled her over for speeding. As he was giving her the ticket, she said,

"How come I always get a ticket and everyone else gets a warning? Is it my face?"

"No, ma'am," explained the officer, "it's your foot."

\*\*\*

There was a competition to swim from Santa Monica to Catalina doing only the breaststroke, and the three women who entered the race were a brunette, a redhead and a blonde. After approximately 14 minutes, the brunette staggered up on the shore and was declared the fastest breaststroker. About 40 minutes later, the Redhead crawled up and was declared the second place finisher. Nearly 4 hours after that, the blonde finally came ashore and promptly collapsed in front of the worried onlookers. When the reporters asked why it took her so long to complete the race, she replied, "I don't want to sound like I'm a sore loser, but I think those two other girls were using their arms."

\*\*\*

"How long have you been driving without a tail light?" asked the policeman after pulling over a motorist. The driver jumped out, ran to the rear of his car and gave a long, painful groan. He seemed so upset that the cop was moved to ease up on him a bit. "Come on, now," he said, "you don't have to take it so hard. It isn't that serious."

"It isn't?" cried the motorist. "Then you know what happened to my boat and trailer?"

\*\*\*

A man walks into a shoe store, and tries on a pair of shoes. "How do they feel?" asks the sales clerk.

"Well... they feel a bit tight," replies the man.

The clerk promptly bends down and has a look at the shoes and the man's feet. "Try pulling the tongue out," offers the clerk.

"Nath theyth sthlll feelhth a bith tighth," he says.

\*\*\*

Schneider applied to a finance agency for a job, but he had no experience. He was so intense that the manager gave him a tough account with the promise that if he collected it, he'd get

**Internal Resistance In Ohms of Cell / Battery Vs Depth of Discharge**

Battery Type	10% Depth of Discharge	50% Depth of Discharge	90% Depth of Discharge
D Cell	0.15	0.17	0.60
C Cell	0.20	0.40	1.00
AA Cell	0.15	0.50	0.75
AAA Cell	0.25	0.40	0.85
9V Battery	2.00	3.00	10.00

Battery	Condition	Open Circuit Voltage $V_O$	Voltage with Load $V_L$	Load Resistance $R_L$	Calculated Internal Resistance $R_i$	Depth of Discharge
AA Cell	Found in small flashlight	1.5642	1.5206	4.7	0.13	10%
AA Cell	The other small flashlight battery	1.5667	1.4999	4.7	0.21	30%
AAA Cell	New from freezer	1.5872	1.5040	4.7	0.26	10%
D Cell	Found on Desk	1.6030	1.4948	4.7	0.34	70%
9 V	Found on desk	7.2900	7.0600	300	9.77	85%
9 V	Found on desk	7.1000	6.6000	300	22.7	100%

the job. Two hours later, Schneider came back with the entire amount. "Amazing!" the manager said. "How did you do it?" "Easy," Schneider replied. "I told him if he didn't pay up, I'd tell all his other creditors he paid us."

**The Thought for the Month of May**

Believe in who you are, use wisely what you have, and each day will bring you a smile.

**Did You Know...**

Lightning travels 90,000 miles a second, almost half the speed of light (186,000 miles a second.)

Solve the puzzle: SIT WALYSA A SUPLERA E OT ESE YUO

*Have a great day, 73, Peggy (Giggles) Bell, K4EGB*

**From The EMA**

I'm sure each of you are glad that the cold weather of winter has lost the battle to the warmer weather of spring. However, we can't let our guard down while enjoying those outdoor barbeques. Now is the time to be sure our batteries are kept charged and our antennas are in good shape. We need to take time to participate in our weekly Madison County Emergency and SKYWARN training nets and step up to the plate to run one of these nets from time to time and give the usual net control operators a well deserved break.

The RACES program continues to do well in the area of training. On April 11th, the RACES unit was presented a class on flooding and stream monitoring by Dr. Warren Campbell, the City of Huntsville Hydrologist. The class went well and Dr. Cambell showed the members that flooding can happen in different areas, not only near streams. Next month, the unit plans on participating in the drill being held at Huntsville International Airport and at a local hospital in an effort to demonstrate the value of amateur radio communications during an emergency, should one arise.

Finally, as your HARC Secretary, I would like to encourage anyone interested in serving as Secretary for the 2002-2003 term to make their wishes

known to the nominating committee. I will not be serving in that capacity next year due to too many irons that have been placed in the fire over the last year.

*73/ Scott Worsham, W4SSW  
EMA RACES Coordinator & HARC Secretary*

**Testing Batteries.**

Because I'm a slob, at any time, I have more than a few batteries of various types and in various states of discharge stuffed in drawers or scattered about the shack. I've used them for testing or using something for a few minutes. Some were replaced because they were dead and not thrown away. If I needed a reliable battery, which is usually the case, I get a fresh one out of the freezer. It occurred to me that knowing the amount of juice remaining in a battery would be a good thing.

I visited several battery manufacturers web sites looking for info and found what I needed at Eveready's site, <http://www.eveready.com/>. A property of a battery or cell called "internal resistance" can be used to find out how much life is left in a battery, in fact, they have graphs of the depth of discharge as a function of internal resistance in the data sheet for each of its batteries. These data are summarized for the more common battery types in table 1.

Measuring the internal resistance requires only a voltmeter and a few resistors. First, measure the voltage of the battery with no load, then again loaded with a resistor. Call these measurements  $V_O$  and  $V_L$  respectively. I used a 4.7 ohm resistor for the 1.5 Volt cells and a 300 ohm resistor for the 9 Volt battery. Call the value of this resistance  $R_L$ . These values keep the total dissipation to about 1/4 Watt. Use short heavy wires to connect the battery to the resistor. The internal resistance,  $R_i$  is found with the equation:

$$R_i = V_O / V_L - 1 \times R_L$$

I tried this on some of the batteries lying about the shack. I got the following results. Although the history of the used batteries is unknown, the calculated depth of discharge is consistent

**HARC 50th  
Anniversary  
Celebration  
April 26  
BE THERE!**

for used batteries. The new battery came out nearly at spec.

*73, John Farr, KC4ZXX*

### **May Hamfest**

May 4-5, 2002  
Alabama State Convention,  
Birmingham, Alabama  
See <http://www.w4cue.com> or contact  
Glenn Glass, KE4YZK at  
ke4pzk@belsouth.net or 205 681-5019.

### **Flea Market**

#### **For sale:**

Hewlett-Packard 8640 option 232 512 MHz signal generator. Features a built in counter, internal or external pulse, FM and AM modulation, and calibrated output. \$450. Contact John D. Farr, KC4ZXX, [jfarr62@comcast.net](mailto:jfarr62@comcast.net) or 256 533-3508.

#### **For free:**

Tower. I haven't seen it, but from the description it sounds like a Rohn free-standing job about 40 feet tall. You take it down. Contact Bill Perry at [dunlooken@tnns.net](mailto:dunlooken@tnns.net) or 931 469-7017. Located in Huntland Tennessee. (John Farr)

### **The Editor's Wastebasket**

For local recipients of the Vox, this is your last reminder to attend the celebration of the 50th anniversary of the founding of HARC on April 26th. (Out

of town folks will probably get it too late.)

The technically curious among you probably noticed the small item in the April issue of QST by L1AR about an experience with gravity effects on coax cable. It seems to me the claims in the item are as baseless as the claims of the existence of Pthallium Scrolate and Scrolium Pthallate in samples submitted for examination in quantitative analysis labs. (Both compounds are totally inert, PS has a positive molecular weight and SP has a negative molecular weight. It is very useful to assume their existence when an analysis doesn't work out correctly.) It is a similar assumption to the one the surveying lab team I was on made when we started from a benchmark at the Auburn campus Main Gate and ran levels around a group of buildings, then closed back on the starting benchmark. Our obvious conclusion had to be that some geologic phenomenon caused the Main Gate corner to sink ten feet while we were running the levels.

No, it is obvious that the phenomena described as being related to gravity acting on RF signals in the downward facing coax were actually caused by the reporter unknowingly acquiring a length of foam-filled coax whose foam was saturated with Yak-Fat. The Yak Fat causes the characteristic impedance of

the coax to go negative, producing some very interesting effects. The cables normal attenuation becomes a gain. Consider a quarter wavelength piece of coax terminated in a short circuit. The open end will exhibit a very high impedance, which you would expect, but, because of the negative characteristic impedance, minuscule thermal noise currents in the shorting bar at the resonant frequency will be amplified to produce dangerously high voltages at the open end. In fact, safety requires that the shorted end be stored in a vat of liquid nitrogen to minimize thermal currents — after all, any length of coax is a quarter wavelength at some frequency.

It seems obvious that the extreme "gravity gain" claimed by the QST reporter was actually the result of Yak Fat contamination.

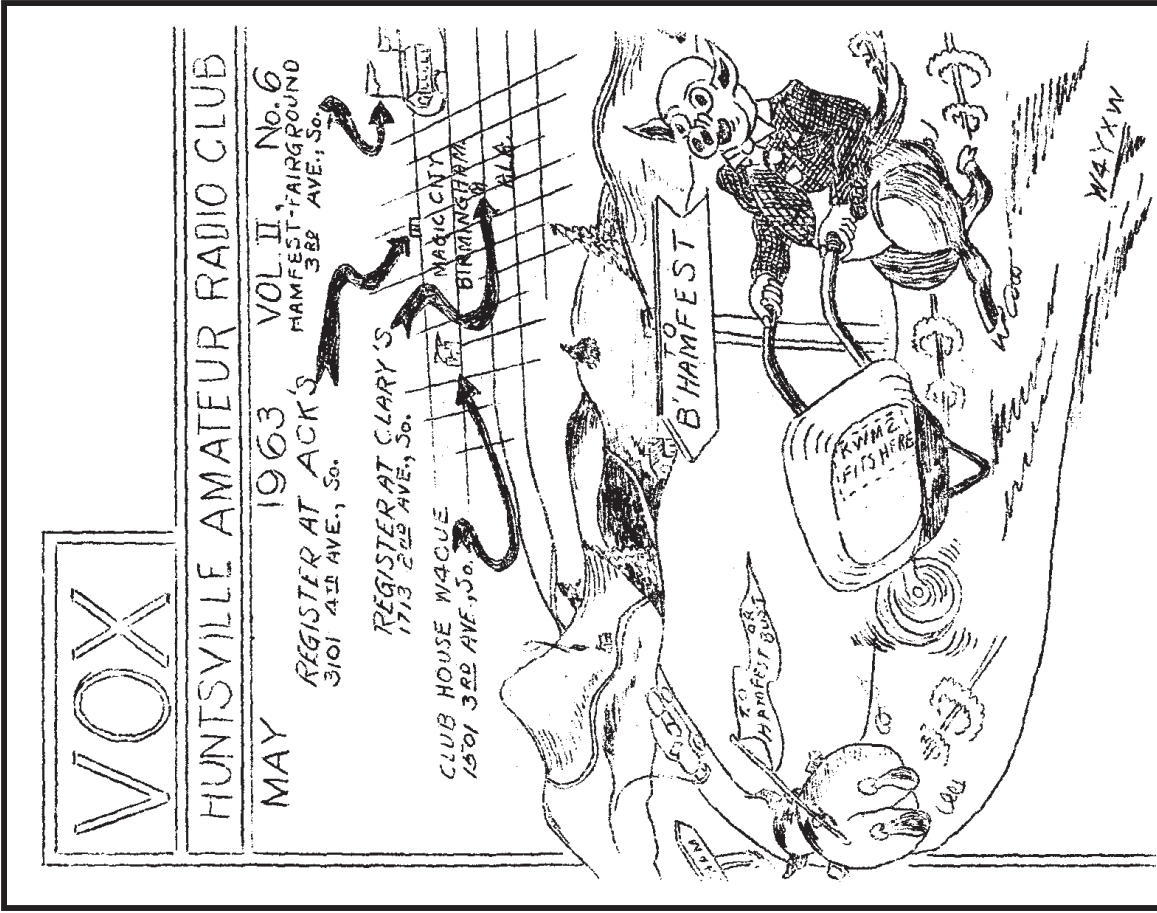
Speaking of Yak Fat, our faithful Yak Fat researcher, Jim Brashear, WB4EKJ, now of Kentucky, informs me that cheese made from yak milk is now being marketed in the US. In the interest of minimizing its possible use by terrorists, the Commissar of Homeland Security has mandated that only lowfat cheese be made available to the public.

*73, Frank Emens, W4HFU*

NON-PROFIT ORG  
U. S. POSTAGE PAID  
HUNTSVILLE, AL  
PERMIT # 637

Yhuntsville Amateur Radio Club  
P. O. Box 42-3  
Huntsville, Alabama 35804

Labels must be parallel to the bottom of the  
mailpiece within 5 degrees. Please affix labels  
carefully. Cover this block completely.



Our thanks to Jared Cassidy, KQ4VT for scanning these  
vintage covers by Bill Owens, W4YXW and making them  
available for the Vox.