



the RARA RAG

Published by
ROCHESTER AMATEUR RADIO ASSOCIATION, INC.

VOL. 48

October 1995

NO. 2

THE PREZ SAYS

The October general meeting will start at 7:30PM; this is one-half hour earlier than usual. This is a ONE TIME change to accommodate the people at the Henrietta Fire Hall who need extra time to set up for a wedding reception the next day. We wish the happy couple well.

Several members have asked why we cannot begin our meetings earlier every month; the answer to this is simple. It is nothing more than a question of manpower. The persons who set up the room for our meetings have day jobs, as do many of us, and frankly can't provide their services any earlier than they do now. Perhaps if volunteers come forward to set up the meeting room earlier, the Board of Directors will be pleased to reconsider the meeting time.

Sometimes the question comes up of why we meet on Fridays. While the answer to this is equally simple, it is not necessarily as compelling. In a word, tradition; RaRa has met on Fridays for a good long time. Does anyone remember why Fridays were chosen?

I have been told by some members that Friday evenings are devoted to family life; a concept not at all unfamiliar to me. After considering that most of the other local amateur radio clubs also meet on Fridays, it is easy to understand that family life can be stressed by overindulgence in the hobby. There are, however, ways to keep everyone satisfied.

Those of you that attend the meetings have seen children enjoying the evening out with Dad. Much to his credit, Keith Freeburg N2BEL has been able to incorporate the kids into part of the evenings fun. Short of opening a day-care center, we can try to keep them entertained (and well-fed) if you bring them along.

I have been asked to pass along the address to subscribe to the ARRL bulletins via the Internet. Here it is: info@arrl.org. Send an e-mail message to that address with the following three words, each on a separate line; HELP INDEX QUIT. You will

continued on page 2

RaRa MEETING

October 6, 1995

*******7:30 P.M.*******

Henrietta Fire Hall
3129 East Henrietta Road
Program to be announced

**PLEASE NOTE THE TIME
CHANGE FOR THIS MONTH
ONLY!!!!**

Howdeee

Your Board of Directors is looking for singles/couples interested in a great dinner and dancing to a live band or DJ at Rustlers Roost in Henrietta, during the week of Feb.11, 1996. Please call RaRa at 442- 0587 and leave a message with name/call, and number who would attend.

SILENT KEYS

Benito U. Moneta
NM2G
August 28, 1995

Howard Newman
KA2EQT
September 5, 1995

Raymond W. Berg, Sr.
KA2TDA
August 20, 1995

Howard F. Keller
K2GQE
May 27, 1995

the **RaRa Rag**

PUBLISHED BY
ROCHESTER AMATEUR RADIO ASSOCIATION, INC.
P.O. Box 93333, Rochester, NY 14692-8333

Editor.....Neal Eckhardt, WB2EKP
80 Authors Avenue, Henrietta, NY 14467 (716) 359-2672
Internet:eckhardt@cyber1.servtech.com

Managing Editor.....Dick Goslee, K2VCZ
24 Elaine Drive, Rochester, NY 14623 (716) 334-1762

Advertising Editor.....Dick Goslee, K2VCZ
24 Elaine Drive, Rochester, NY 14623 (716) 334-1762

VOL. 48 OCTOBER 1995 NO. 2

OFFICERS.

President: Chris Reich, WB2DYJ.....254-2906
Internet: cnr@rfc.comm.harris.com
Vice President: Art De Bruycker, W2YGW.....223-4353
Secretary: George Lloyd, N2UJO.....637-9499
Treasurer: Richard Goslee, K2VCZ.....334-1762

BOARD OF DIRECTORS:

Lloyd Caves, WB2EFU.....671-7079
Neal Eckhardt, WB2EKP.....359-2672
Internet: eckhardt@cyber1.servtech.com
Keith Freeberg, N2BEL.....458-8246
David Hassett, K2SQI.....621-1846
Edwin Holdsworth, N2EH.....624-1929
Joseph Hood, K2YA.....865-9092
George Muller, WA2IEO.....381-6151

Club Historian: Bruce Kelley, W2ICE
Public Service Coordinator: Edwin Holdsworth, N2EH
License Testing Directors: George Platteter, AA2FO
Membership Chairman: Alex Piccirilli, NV2Y
Licensing Course Director: Art DeBruycker, W2YGW
Hamfest General Chairman: Harold Smith, K2HC
K2JD Engraving: Edwin Holdsworth, N2EH

The RaRa Rag (USPS 605-440) is published monthly except July and August by the Rochester Amateur Radio Association, Inc., 24 Elaine Drive, Rochester, New York 14623. Subscription is \$5.00 per year (included in the \$10.00 annual membership dues). Second class postage paid in Rochester, NY.

POSTMASTER - Send address changes to The RaRa Rag, P.O. Box 93333, Rochester, New York 14692-8333. Full permission is granted for reprinting articles provided a credit line is given to the RaRa Rag. The Rag exchanges, with other organizations publications.



Amateur Radio News Service

continued from page 1

receive a return message with all the information you need to subscribe to their services.

Do you know any scanner enthusiasts who have not been bitten yet by the ham bug? Why not write down some of the local repeater frequencies for them to listen to? Tell them about the Monroe County FM net on Sunday evenings, and the bulletins sent twice weekly. The Western District (traffic) Net is meeting now on 145.31 MHz, until the replacement repeater is installed on 146.64 MHz. Listen for them at 11AM, 630PM, and 930PM local times.

I remind you that each meeting has time allotted to what I refer to as an open forum. Consider this as "Show 'n Tell" for grown-ups. Perhaps you've gotten a DXCC endorsement, made Brass Pounders League, or passed another examination element. You've earned bragging rights, and are welcome to use them during the open forum. If you need technical help, manpower for antenna erections, or are looking for parts, ask during the open forum; we've already helped out a few members this way.

The Pumpkin Patrol for Monroe County will be organized this year by the local ARES group. Two men in blue from the New York State Police Troop T addressed RaRa at the September meeting. They explained the purpose and logistics of the Pumpkin Patrol and offered insight into the high visibility Amateur Radio receives at the state level due to such activities. Please consider signing-up; it will help keep our highways safe on Halloween. A certificate is to be awarded to all participants. Ed N2EH will give all details at the October meeting.

The Simulated Emergency Test is coming up. Are you ready? Do you have enough battery power to last the duration? If you do, how will you see when the lights are out? Do you have an oil lamp (and oil) or DC lights? Is the generator handy and in operating condition? Do you have a backup antenna if your main one falls due to ice loading? Now is the time for getting prepared. Do it now while the weather is still decent. Really. Do it now. Right now. Why are you still reading this?

RaRa Hotline

(716) 442-0587

24 hours a day

THE WA2AAC REPEATER

1995 is bringing some major changes to our WA2AAC repeater systems. We expect to hear great comments from the users. There is a new repeater and amplifier for 146.88 in the testing stages. A replacement set of duplexers are in tune-up for 442.7. The back up 146.88 will get new transmit and receive antennas, and a complete new look, (for a privileged few).

The club has purchased a Kendecom Mark 4 repeater, a 100 watt power amplifier, and a controller. They are at N2HJD, Bob's home now, up and running into a dummy load, (as I write this). We will be installing them soon, into the cabinet, and on to the antenna- It is hoped that the 7 pole front end of the new receiver will keep out the local signals, and bring the front end sensitivity back to normal. There will also be a increase in the power out, with the new PA.

A new UHF duplexer will allow us, (we hope), to put our 50+ watt power amp. back into service, in 442.70. We also will have a radio link, to 146-88, to give a north east area input.

The Uniden .88 repeater and the power amp coming out of H&SS, is slated to go into the back up service at Cobbs Hill, with the new controller. Our new transmit antenna will be at the 130 foot, south level, and the new receive antenna will be at the top, 170 foot, of the new tower at the Hill.
See you on the airways *Len "WA2ZNC"*

FOR SALE: Complete plug 'n play 100 Watt HF SSB/CW transceiver. This HW-101, 80 thru 10 meter rig comes with every thing needed to operate; rig, power supply, microphone, speaker, interconnect cables, manuals and a spare 6146 final. Built by a Technician at Harris/RF and is in perfect, as new condition. Will demonstrate. \$150.00 from Ed Gable, K2MP, 392-3088

Patrick C. Moyer, N2AIW
Attorney & Counselor-at-Law

General Legal Services
ARRL Volunteer Counsel Participant
AOPA Legal Plan
Masters Degree in City Planning

Day and Evening Hours
(716) 427-9907
2128 W. Jefferson Rd. • Pittsford, NY 14534

Advertisement

October Calendar

- 6 - RaRa Meeting - 7:30PM - Henrietta Fire Hall - 3129 East Henrietta Rd.
- 21- RaRa VE Testing - 111 Westfall Rd. 8:30 AM

PLEASE EXECUTE (SIC) HIM

By Dave, WD5BRP

Excuses written by parents to teachers often bring smiles and sometimes, out right laughter when read. The following are a few true examples.

Dear school:

- 1. Please excuse John of being absent on January 28,29,30,31,32,and also 33.
- 2. My son is under the doctor's care and should not take fisicaled. Please execute him.
- 3. Ralph was absent yesterday because of a sore trout.
- 4. My daughter was absent yesterday because she was tired. She spent the weeknd with the Marines.
- 5. Please execute Jimmy for being. It was father's fault.
- 6 Please excuse Joyce from (gym) for a few days. Yesterday she fell out of tree and misplaced her hip.
- 7. Excuse Gloria. She has been under the doctor.
- 8. Carlos was absent yesterday because he was playing football. He was hurt in the growing area.
- 9. Please excuse Ray Friday from school. He had very lose vowels.
- 10. Please execute Wayne for being out yesterday, because he had the fuel.
- 11. Plesse excuse Sarah for being absent. She was sick and I had her shot.

Courtesy of W30K Newslette, via The Readout.

M. ORNSTEIN
WB2YYB
CONTRACTING
(716) 334-3258

Roofing

Gutter Cleaning

| | |
|--------------------------|------------------|
| Residential & Commercial | Free Estimates |
| Attic Ventilation | Seamless Gutters |

SOLUTION TO RF FLOATING AROUND THE SHACK

By J.P.Fox, N3GWR

My ham shack used to run the way I thought all ham shacks should run speak into the microphone and all the RF is emitted from the antenna. The transceiver and power supply were in a second-hand cabinet. Across the small room was the tuner. It was near the station ground, and it rested on a cardboard box. The loudspeaker was mounted between the studs, hung by a single drywall screw. Not pretty, but all worked. Life was good.

Then I made a few changes around the shack one weekend. I moved all the equipment out of the shack for a little remodeling. After having looked at the studs and insulation for a few years, I finally put up wallboard. I built myself a two-tiered desk (the operating position) to eliminate the awkward arrangement that occurred over time. Then I moved all the equipment back into the shack. I hooked up every piece of gear "exactly" as it was before, only they were closer together and easier to reach. It was supposed to be heavenly. It wasn't!

I might as well have moved into a completely different location, one that was quite the opposite of heaven. I remember it well. It was the middle of the day. Ten meters was open. I tuned up. I said "N"..... I didn't get to the "3", and I knew I had a problem! I had expected to finish ---"GWR testing", but I stopped speaking as the sound of distortion rang through my head! My transceiver has a monitor, and I could not believe what I was hearing coming back at me. I had read about RF feedback and now I had a first-class case of it. Also known as "RF floating around your shack", it's a mysterious phenomenon, with no simple one cure-all.

One fellow ham suggested it was "ground loops". These are caused by poor grounds between the various components in your shack.

So, I looked at the ARRL Handbook, got some heavy metal braid, and connected all the pieces together, just like in the drawing. It helped, but it was not a total cure. Another ham suggested, "you need a counterpoise". This is a quarter-wave piece of wire you attach to your "problem". The theory is that if there is an RF hot spot, this resonant piece of wire will move the voltage to the far end of the wire, where it will not harm the equipment. (Hint: Keep the "voltage" end insulated, or you may cause other problems.) This seemed to help a little, but only on the one band. A separate counterpoise is needed for each band. I installed several.

The point-oh-one's are small capacitors, usually written as ".01". They are about the size of a nickel, pass RF right through, and block audio frequencies and direct current. There is a 12 volt accessory jack on the back of my rig which goes to the lights in the tuner, so a .01 at each end of the wire, "hot-to-ground", as installed. At the loudspeaker, I installed a .01 across the speaker terminals. I knew from some of my historical audiophile experience that if you were bothered by "CBer's" that this might be the cure.

Now that my shack was rearranged, and my soldering iron was hot and while I was thinking like an audiophile, I shortened the wire from the radio to the speaker. Hi-fi buffs don't like long speaker wire runs. They claim really long runs of speaker wire can "color" the music. The effect is to attenuate the high audio frequencies and your music won't sound as bright.

If you are a fanatical stereo buff, you may already have heard that esoteric theory. The basis is that long runs of speaker wire result in high interwire capacitance. Capacitance occurs anytime two electrical conductors get near. The longer the speaker wire, the higher the capacitance. The high capacitance acts as a high cut filter.

As a corollary, don't use coaxial cable to connect your audio amplifier to your speakers because the capacitance per foot is several times greater than regular speaker wire. This theory sells a lot of premium audio cable. At my house, I use 18 gauge electrical zip cord, save my money, and give the treble control on my stereo a nudge upward.

But I digressed back to ham radio. I tuned up the rig, and at this point there was a noticeable improvement in my signal. As long as I ran reduced power, say 50 watts, and tolerate a "little" distortion, I could operate.

I was not having a problem on 80 meters. So, what was different about 80? Well for one thing, I was feeding it with coaxial cable, and on all other bands I was using a 40 meter extended double Zepp (40m EDZ) which was fed by open wire. Was this the problem? I have a triband beam for 10, 15, & 20m, but I don't have a tower. I temporarily installed the beam on a ten foot section of tower, ran the coaxial cable, and, VOILA!, 10, 15, & 20m work. Should I now condemn the open wire? I did not want to, because I like to work the WARC bands, as well as listen to short wave using the tuner and open-wire-fed 40m EDZ.

Previously, when I was shortening the speaker wire, I realized there was quite a rats nest behind the rig. Maybe if I shortened each wire, made things nice and neat it might help. It didn't, but at least it looks nicer.

During this time, I took the transceiver out of the shack on two occasions. I operated the Pennsylvania QSO Party portable, the rig ran great. I brought it home, it didn't. I took the rig to a friend's shack, and it operated flawlessly. I brought it home and it didn't. So I knew it wasn't the rig. I got a headset with a microphone attached for Christmas. It had no effect on the RF problem. Thank goodness.

The feedline came close to my speaker, a 12-inch full range, high-compliance beauty on a wooden mount. The wire connecting the radio to the speaker was only 18 inches long. Could this short run be a problem? As I spoke and monitored myself in the headphones, I disconnected the speaker. The distortion ceased! The problem was isolated, but how could I cure it?

Even when the speaker was not in use, it still was a good path for RF to get back into the rig. I like to listen with a loud speaker, so what could I do? I could not shorten the wire, but I could replace it. That moment I realized two things: 1) It's OK to use coaxial cable to feed a speaker in this application, and 2) the frame of the speaker was not grounded! The drawing in the Handbook didn't include a speaker. One ground-strap, 18 inches of coax, and in a few minutes, I cured a nasty problem.

As they say, "Hindsight is 20-20." Maybe I should have known to ground the speaker frame earlier. Maybe I should have changed one thing at a time. If I had added the ".01" to the speaker, ran a test, AND THEN shortened the speaker wire, I would have been able to isolate the problem sooner. However, I did make one personal discovery, which I now advocate. I now say: Feed your ham shack loudspeaker with coax. It helped me cure a problem, and so I'm passing it along. I'm sure I'll never be as famous as G5RV, but if you ever change the speaker wire in your ham shack to coax, please think of me, N3GWR-

Thanks The W30K Corral, newsletter of the Delaware-Lehigh ARC, Inc. Nazereth, PA. Via The Readout

BIMINI TOPS DODGERS

VORNRAN MARINE CANVAS
at Fabric City



Our Boat Covers Are Tops.

1800 N. Clinton Ave., Rochester, NY 14621
(716) 266-6440

UPHOLSTERY Chuck Vorndran DRAPERIES
WB20ZS
Advertisement

THE RaRa RAG YEARS AGO

by Ed Gable K2MP

20 YEARS AGO - OCTOBER 1975: Last month we reported the loss of the September issue from the 1975 archives. it's worse than that - much worse. The entire 75/76 RaRa year is missing! Anyone out there have some to donate or let me borrow? I'll be checking other sources, too. In the meantime enjoy the 40 year history.

40 YEARS AGO.- OCTOBER 1955: Linc Cundall, W2QY, was elected Trustee of RaRa's Club Station, W2QCN. A committee consisting of Sherwood Snyder, W2KFU, Orv Bauer, W2TEX and Fred Halik, W2PFI, was chartered with studying the advantages and disadvantages of incorporation for RaRa. The topic for the October meeting was a technical one on Single-Side-Band by Hank Blodgett, Fran Sherwood and Fred Becker. At this time RaRa meetings were being held the 2nd Thursday of each month at the Rochester Museum on East Avenue. Hank Blodgett, W2UTH, announced that he is running for the office of Atlantic Division Director. An FCC bulletin dated September 8th reminded everyone that all portions of your signal; sidebands, carrier, etc., must remain inside the Amateur band. From the Want Ads, you could buy new-in-the-box 811A's for \$1.50 each. Hi-C Electronics on State Street remains a long time advertiser.

RAMSEY

Open
Saturdays
10 AM-2 PM

SURPLUS OUTLET STORE

- Complete line of cable and connectors
- ARRL Publications
- Component parts
- Complete Ramsey kit line
- Large selection of coils and other hard to find RF parts
- Consignment sales
- Plus the usual surplus goodies

Only 15 minutes from Rochester in Victor

DIRECTIONS

From 490 West (thruway Exit 45)
Exit 490 West at last exit - Rt. 96
South on Rt. 96 1 mile to Rt. 251
Right on Rt. 251 2 miles to Canning Pkwy -
O'Neil Associates Building on corner
Right on Canning Pkwy to Ramsey Building

From Southwest areas
Take Rt. 64 to Mendon 4 corners (Rts. 64 & 251)
East on Rt. 251 2 miles to Canning Pkwy

Ramsey Electronics, Inc.
793 Canning Parkway Victor, NY 14564
Phone 924-4560 Fax 924-4566

GENETIC ENGINEERING

Dr. John Bigham, noted geneticist from Western University has produced a clone of himself. The result was less than expected as the clone took to using extremely foul language and refused to change. After going on for some months, Dr. Bigham decided that action was necessary. He took the clone out for a walk to the edge of a cliff. He gave the clone a push and over it went, falling to it's death. A police officer witnessed the event and immediately placed Dr. Bigham in custody. The charge: Making an obscene clone fall.

Thanks The Emitter

Next Rag Deadline

October 13, 1995

SNYDER AND SNYDER **Attorneys**

Serious injuries from Auto, Work and Construction Accidents:

Fractures, Scars, Paralysis & Burns

Defective Products

Social Security Disability

Wills, Trusts and Estates

Adoptions

Real Estate

Business Incorporations

Limited Partnership Losses

Stockbroker Misconduct

Paul I. Snyder

Jeanette F. Snyder

Sherwood M. Snyder, W2KFU

(716) 546-7258

183 E. Main Street

Suite 1024

Rochester, NY 14604-1681

TALES OF OLD-TIME RADIO

The year was 1930, my QTH was Newark, NJ, and my call was W2CWD. The filaments glowed brightly through the pinholes burned in the plates of the old Western Electric VT-2 vacuum tube (a discarded telephone company repeater tube). No, not the kind of repeater you know today! The phone company boosted their line audio at points along their circuits with audio amplifiers. These tubes were pulled from service based on hours of use, but still had life in them. If you "knew" someone, you could get one or two for free.

At 300 volts and 50 milliamperes you could get 3 or 4 watts output from a self-excited oscillator (no VFO or crystal control in those days). With 125 feet of end-fed wire you were in business on CW.

My receiver was one tube in a regenerative circuit (a UV-199 tube, powered with 3V for the filament and 22 1/2 V on the plate); it was built on a pine board with a 1/8" plywood panel. My wood tuning knob was from a Tinker Toy set. Power was from dry cells.

To tune in a signal you had to determine "over-shoot" or "under-shoot" of frequency because, when you removed your hand from the knob, the frequency would shift due to body capacity. Some of us got pretty good at guessing how high or low to tune and still have the signal remain when we removed our hand. We learned (much later) how to glue tobacco-pouch "lead" foil to the back of the panel to avoid this effect. (Aluminum foil was unknown).

The '30s were the lean years of the great depression - no money for radio parts. You scrounged what parts you could to finally get a station pulled together. Mom and I shared a third-floor furnished room (one small corner for the ham station). I had a job at Westinghouse (\$12.50 per week). Walking home each evening I would stop at a Jewish "green" grocer and butcher shop for a couple of potatoes, a carrot or two and a small patty of ground beef. Stewed on a small gas plate, this was our evening meal.

Mr. Dreyfus, the butcher-shop owner, was a kindly man (a distant relative of the famous political prisoner). One night I found him in tears. It seems his son, Milton, a ship radio operator, was taken seriously ill and was replaced by another operator on the fruit boat that ran between the gulf area and Newark Bay, The operator called the old man but could only say that Mill was taken to some hospital on the Texas coast. Knowing that I had a ham radio station, the old man asked if I could help in getting word of his son.

That evening I put the "can" to my ear (ear-phones were called "cans." I use the singular because I could only afford one). With the ear-piece strapped to one ear I called several directional CW CQ's. I finally contacted a Texas ham. He contacted other Texas hams and they found Milt Dreyfus in Soldier's and Sailor's Hospital in Houston, TX. Milt's diagnosis was "advanced TB," and he was in bad shape. Via my Texas contacts, I handled many messages between father and son. Weeks later Milt died. My last ham gesture was arranging for his funeral.

The old man wanted to reward me. It was difficult to explain that accepting any remuneration would jeopardize my amateur status. He was not to be put off and, in my opinion, did a wonderful thing. I was presented with a document, duly witnessed and recorded, granting me and my family lifetime privilege to sit in the Dreyfus pew in the synagogue. I never exercised the right, but I value the document to this day.

*Tom Freedom, W3HVE (ex W2CWD)
From the Harrisburg Radio Amateur's Club
newsletter.*

ARRL REPLIES TO FCC'S RULES CHANGE PROPOSALS

The ARRL has filed reply comments on FCC proposals of several rules changes, in WT Docket 95-57.

The League reiterated its original comments (detailed on page 512 of September 1995 QST) and responded to several comments and suggestions by others.

On the matter of a lifetime amateur operator license (an original ARRL proposal) versus granting to an expired licensee credit for licenses previously held (the FCC's proposal), the League said that while comments were mixed, those comments on the FCC's proposal failed to consider a lifetime license as a superior alternative.

The League cited its strong opposition to the idea of a volunteer examination 'session manager,' saying that the shared responsibility of three volunteer examiners is crucial for continuing the integrity of the VE program.

The League in its reply comments said that most others who commented supported its proposal to increase from two to four the number of licensed members required to constitute an Amateur Radio club for the purpose of obtaining a club station license.

Finally, the ARRL noted that almost no comments had been received, pro or con, on

proposals to expand the ways to 'sign portable' and to offer temporary 1x1 call signs to special event stations.

UNIQUE VERBAL CW CONTACT

By John W. Slavik, WB8YTQ

This is a true story that happened some during Field Day in the early 1980s. We were operating in the 6 Meter tent around 2 AM Sunday morning. The band was very quiet and almost completely "talked out." A W2 club station was spotted operating CW in the SSB section, by another operator. Because no one had planned to operate CW on 6M, I ran off quickly to five other operating tents.

I came back out of breath with 2 CW keys, but neither would fit the 6M transceiver CW jack. After all this effort, I was not going to let this contact get away!

Out of complete desperation I picked up the microphone and called the W2 station using verbal "dit dah dah, dit dit dah dah dah," in a straight monotone voice at about 10 wpm. I let up on the microphone and heard no reply.

Being persistent, I repeated my transmission and again waited. Finally, after at least one minute, they came back using CW and completed the exchange. I thanked them for the contact, good luck in the contest and signed, using verbal CW. I had a difficult time transmitting in this mode, due to our 6M operators rolling around on the ground laughing, and at least three bystanders from other tents, in hysterical laughter!

Ten years later, I told this story to a small group of friends from New York at a hamfest. One ham jumped up and said "was that you?" he exclaimed, 'I was the 6M CW operator that night "After we all laughed for several minutes, he then asked, "Do you know why there was a long pause before we came back to you?" He replied, "We were all too busy trying to pick our laughing bodies up off the ground and gather as many operators as we could to hear this!"

Thanks Worldradio via The Readout

BRIEFS

from the ARRL Letter.

The Federal Communications Commission's new Interference to Home Electronic Entertainment Equipment Handbook is available for \$2.50 postpaid from the US Government Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250.



Irv, AF2K and Chet WB2MDO man the engraving machines at the Buffalo Hamfest. Picture courtesy of Chris WB2DYJ.

GLENWOOD

**594 HAGUE STREET
ROCHESTER, NY 14606**

HOURS:

**M-F 9:00 AM - 5:00 PM
SAT 9:00 AM - 12:30 PM**

PH: (716) 328-1600

FAX: (716) 328-3630

WE STOCK THE FOLLOWING:

**AC CORDS
CAPACITORS
COAX CABLE
CONNECTORS
DIODES
ENCLOSURES
FANS
FUSES
FUSEHOLDERS**

**IC'S
LAMPS
LED'S
MOTORS
POTENTIOMETERS
RELAYS
RESISTORS
SCR'S
SHRINK TUBE**

**SOLDER
SWITCHES
TRANSISTORS
TRIACS
TRIMPOTS
VARIABLE CAPS
WIRE/CABLE
ZENER DIODES
LOTS MORE**

TRY GLENWOOD FOR ALL YOUR COMPONENT REQUIREMENTS

FULL LINE DISTRIBUTORS FOR

**NTE
PRB
GC/THORSEN
SL WABER
WAHL**

**Replacement Semi's
VCR Belts & Accy
Tools & Chemicals
Outlet Strips +
Soldering/Drilling
Tools & Accy**

**TYTON
PROTEK
MUELLER
GOLDSTAR
PALADIN**

**Cable Ties
Test Gear
Test Leads
Test Gear
Tools**