

The Call Letter

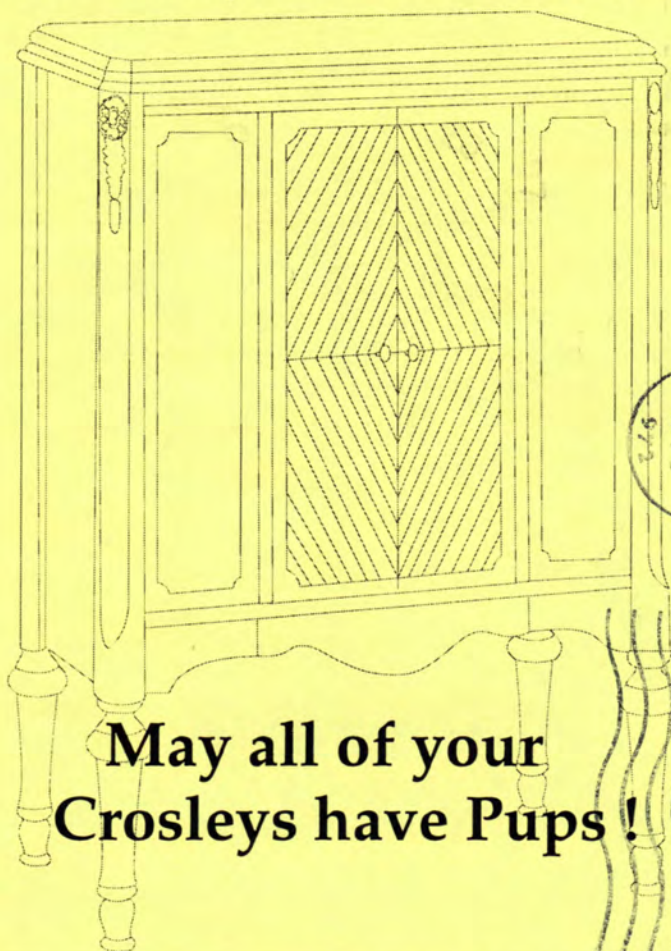
of the Northwest Vintage Radio Society

Vol 22

February 1996

No. 2

February Meeting - February 10th—
Sounds of Nostalgia in Salem Feb 11th -



**May all of your
Crosleys have Pups !**

The *Call Letter* celebrates over 2 decades in print.

Northwest Vintage Radio Society

The Northwest Vintage Radio Society is a non-profit historical society incorporated in the State of Oregon. Since 1974 the Society has been dedicated to the preservation and enjoyment of "vintage radio" and wireless equipment.

Membership in the Society is open to all who are actively interested in historic preservation. The dues are \$15.00 for domestic membership, due on January 1st of each year (prorated quarterly).

The Call Letter has been a monthly publication since 1974. It was originated with the first president and continues to be a publication that both informs members of the society's business and that supports the hobby of collecting, preserving, and restoring vintage radios.

Society meetings are held monthly (except July and August) at the Northwest Vintage Radio Museum, 7675 SW Capitol Highway (at 32nd street) in Portland Oregon. They convene at or about 10 AM for the purpose of displaying radios, conducting Society business, and information exchange. Guests are welcome at all Society meetings and functions (except board meetings)

Other Society functions include guest speakers, auctions, radio shows and radio sales which are advertised in the Call Letter and are held in and around SW Portland.

Society Officers:

President	Greg Bonn	(503) 642-5097
Vice President	Speed Feldschau	(503) 390-3928
Treasurer	Ed Charman	(503) 654-7387
Secretary	Ken Seymour	(503) 642-9115
Board member at large	Ed Pittaway	(503) 645-2883
Call Letter Editor	Dick Karman	(503) 281-6585
Museum Curator	Frank Rasada	(503) 246-3400

The Society's address is:

The Northwest Vintage Radio Society
Post Office Box 82379
Portland, Oregon 97282-0379

February 1996 Table of Contents

Meeting Minutes	2
Atmospherica	4
In The Shack with Mike	5
Crystal sets and the Beavers	10
Tech Tips	12
SWAP SHOP	15

The CALL LETTER

Editor, Dick Karman, (503) 281-6585

Note: CALL LETTER material
should be sent to the Post Office Box !

Call Letter Deadline
20th of the month
prior to publication.

The Call Letter is the official publication of the Northwest Vintage Radio Society. Circulation is limited to the membership and guests of the Society. The Society is not responsible for the material contributed for publication, nor the quality, timeliness or accuracy of the items offered for sale in the SWAP SHOP. By common agreement of the board of directors, the buyer assumes all responsibility for the satisfaction of any transaction.

Dues are due !
- Still \$15 for 1996 !

Meeting Minutes

By: Secretary Ken Seymour, KA7OSM

The January 13th, 1996, meeting of the Northwest Vintage Radio Society was called to order by the club President Greg Bonn at 10:09 AM, with 34 people in attendance. The minutes from the October 1995 meeting were approved (no official meeting in December) and Ed Charman followed by giving the Treasurer's report.

Good & Welfare: None to Report.

Old Business

Greg opened up discussion to see if anyone had issues about the dues increase. Call Letter editor Dick Karman proposed increasing the yearly rate by 2 to 3 dollars. He was concerned about the effect of the dues increase on out-of-town Club members. As you may recall, the suggestion was made to increase dues from \$15 to \$20 last September. Mike Parker reported that if our dues were to be placed at \$20 per year, we would have one of the highest dues in the Country. It was acknowledged however, that many other clubs have higher memberships which brings in a higher revenue base. Rudy Zvarich then made a motion to retain the dues at the 1995 rate of \$15. A vote was then taken and the motion was passed. So, the official Club dues will remain at \$15 throughout 1996. Finally, it was mentioned that members should review our financial situation midyear to see how the club finances look.

Greg reported that the Christmas dinner was excellent and the turnout was better than expected considering the bad weather that day. He also mentioned that the Club owes Mary Rasada about \$100 in excess of the previously authorized expenditure for the dinner. A motion was made and passed to reimburse her for the expenses.

Lloyd Godsey reported on using the Pay-N-Pak store in North Portland as a potential swap location. He reported that an initial rental would be \$600. (Additional usage

would cost more than the first time fees.) This would include a fee for tables which typically are already setup for shows. Lloyd and Adam Schoolsky were going check with the Hood View Amateur Radio Club about doing a joint swap in order to reduce costs and bring in more potential buyers.

Dick Karman reported that the Club roster would be forthcoming in one of the future Call Letters.

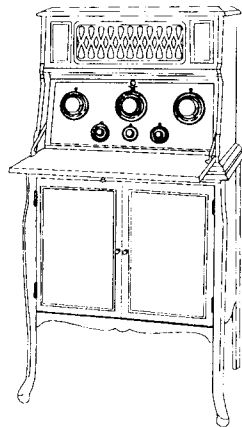
Greg then closed out the remaining unfinished business of 1995, the election of new Club officers for 1996. The floor was opened for nominations. There were no new volunteers or nominations made. As a result, a motion was made from the floor to retain the 1995 officers. This was seconded and passed unanimously.

New Business

Adam Schoolsky volunteered to create a web site for the Club on the Internet. Dick Karman was going to forward the Club logo and other artwork for Adam to use. Dick Karman then went over the bylaw changes that were published in last months Call Letter. A motion was made and approved to accept the changes.

Finally, a suggestion was made to explore ways for members to exchange technical information more efficiently. Speed volunteered to look into various ideas and would report at the next meeting. The meeting was then adjourned at 11:18 at which time members participated in a fun Auction, hosted by Dick Karman who did an excellent job showing his oratory skills.

The results and the lucky bidders are listed on page 4:



Auction Results

Heath kit AM/FM tuner: Ed Charman, \$4.00

Philco Predicta Television: Thaddeus Konar, \$51.00

Mulby 45 rpm Record Changer: Speed Feldschau, \$5.00

ATC Table Radio model 222: no name, \$2.00

Airline Table: Jim Pouch, \$16.00

Sparton 656SX: Brian Toon, \$26.00

Hallicrafters S38: Ed Charman, \$25.00

Military VTVM, Myran White, \$6.00

Zenith 60520 Table, Tom Hoskins, \$6.00

Arvin table compact, Kim Brickman, \$8.00

Record changer assembly and tuner (unknown): Rick Walton, \$7.00

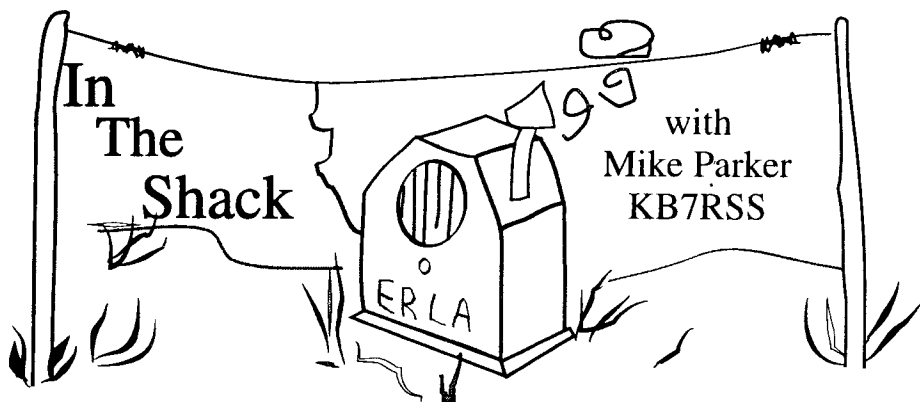
Laboratory meter shunt: Ron Whisman, \$10.00

Hudson car radio in cabinet: Dick Dielschneider, \$2.00



British Mystique

*Pete Young bought a radio antique
From a lady whose joints were a-squeak
He tendered a ten,
Smiled sweetly and then,
Completed the British Mystique.*



What is a Panatrobe? you ask. I am not sure what the name means. I think it's something from ancient Greece. The name is not in recent dictionary.

The Panatrobe was a trade name used by the Brunswick Balke Collendar Co. during the 1920's for their revolutionary, high end model radio-phonographs.

Around 1923 serious efforts were made by the major phonograph companies to combine the upstart radio receiver with the well established phonograph. The immense popularity of the radio was making substantial inroads on phonograph sales.

Many radio manufacturers were already making what they called phonograph panels. The receiver was built on a flat panel that was sized to fit standard crank-up-style Victrolia, Brunswick, Columbia, etc. Then the phonograph companies began making models that combine the receiver of a major radio manufacturers with their phonograph. This was not an add-on item; it was designed and sold as a complete unit. One that comes to mind is the Sonora *Sonoradio* of 1924. A Queen Anne style floor model, it had two lift tops: The one on the right was the crank-up Sonora phonograph; and on the left was a **Ware** model "T", two dial reflex neutrodyne receiver, using 3 exposed UV-199 tubes. The batteries were stored in a compartment below. Brunswick made similar models using RCA radiola receivers.

All of the above mentioned types used a portable type magnetic sound pick-up which was a big selling after-mar-

ket item. You would set your phonograph tone- arm needle on this unit and plug it into your radio output to have a crude but effective radio phonograph. Or was it a phonograph radio?

All was well until the 25-26 season when Brunswick and RCA set the market on fire with their **Panatrope**. Using the basic components of the from the RCA Radiola 30, a very early model *light socket* powered console, and the newly developed G.E. induction phonograph motor. The Panatrope was truly the first successful all electric radio-phonograph on the market. Like other fine quality products of that era, it was also large, heavy and very expensive: cost \$600, F.O.B. New York City.

One fine day a few years ago I happened upon one of these behemoths in an obscure junk shop. Since it was on the Oregon coast, I got a "whale" of a deal on it, a total of \$65.00 was what we settle on. It was a Brunswick Hudson model 260 **Panatrope** (page 31 of the *Radio Manufacturer's of the 1920's*, volume 3, by Alan Douglas.

The cabinet was battered and the legs had been sawed off to make it a low-boy model. I could lift the top and see the phonograph, with its horseshoe magnet tone arm and turntable. Removing the lower back panel I could see the huge metal AP-947 power amplifier with, wow, the biggest amplifier tubes I have ever seen: one UX-210, two UX-281 rectifiers, and a huge metal smokestack with a monster UV-876 ballast tube inside of it; a good eight inches tall! This was getting exciting and I thought, "What a plaything this could be!"

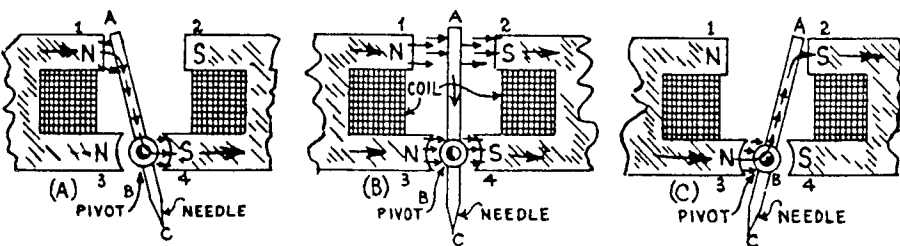
"Where is the radio part?" I asked. She replied, "well, we think it is in the that drawer that pulls out. It's stuck shut - nobody can get it open." I knew it had to be a Radiola so I bought it, radio unseen, and struggled with it out to the van. In the moving process the ornate grill fell off, revealing a large paper cone speaker. I tugged on the radio drawer until I was weak and gave up for the day.

Later, I ended up dismantling the entire **Panatrope** and, after a tug-of-war using giant screwdrivers, the stubborn radio drawer gave way and out slid a genuine RCA Radiola 25 superhetrodyne phonograph model, factory modified for A.C. power operation. All but one of the five UX-199 tubes checked good. The cabinet was such a mess that I decided I didn't want to keep it, and gave it to a friend to make into a liquor cabinet.

In the mean time, I had all of the component parts laid out ready to try. With fire extinguisher nearby, I plugged it in up *In the Shack*. The big tubes lit up and the radio worked after I hooked up a square loop antenna which had been mounted inside the **Panatrope** cabinet. When I switched the lever to phonograph nothing happened but the faint sound of the record coming from the tone arm. I left it like that for quite a few years.

As I acquired more and more 78 RM records, I got very interested in popular dance bands and jazz records from the 1920's. I thought how nice it would be to have the **Panatrope** working. I had since mounted the phonograph parts in a portable case with lift off lid. I decided to get into the problem until it was fixed.

And what a problem it was. After opening up the tone arm pickup head, I got a handful of brittle, dried-up, hard rubber chunks. As I looked inside, I could see the real horseshoe magnet and the electromagnetic coils under it,



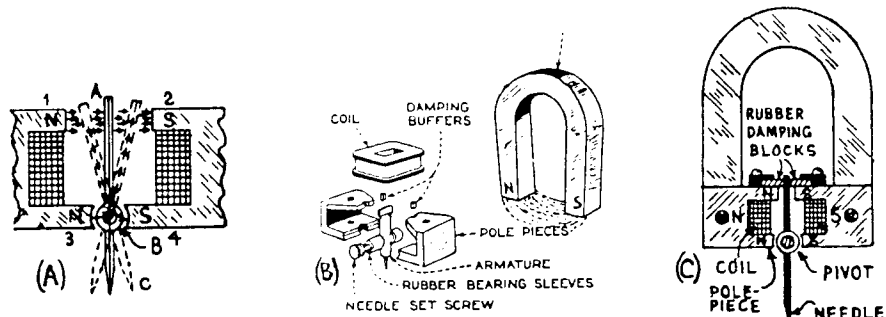
07—The movement of the needle and iron reed or "armature" in the phonograph pick-up unit, varies the magnetic flux through the coil and so induces an e.m.f. in it. The path of the magnetic lines of force is shown here for three positions of the needle and armature.

and the electromagnetic coils under it and the armature with the set screw for the steel needle, but what were these crumbs in my hand?

Not knowing anybody who had tackled this problem, I dug out all the old books I had access to. I finally found two books, both excellent radio repair books from the past, that covered the details of the phonograph repair (see illustrations). One is *"Radio Physics Course,"* by Alfred Ghirardi, 1933, and the other is *"Principles and Practice of Radio Servicing,"* by H.J. Hicks, 1943.

The source of my problem was detailed in the following paragraphs from Mr. Hicks' book. "The most frequent cause of distortion and weak volume is the rubber damping around the armature." What I had in my hand was the remains of the 1926 rubber damping material! Mr. Hicks continues, "The most difficult part of the repair of the packing is to find a sheet of rubber of the correct thickness and pliability. If possible, the proper packing should be obtained from the manufacturer. If this is impossible, (and it is!) a wide rubber band may be of the proper thickness. In some cases, a piece of automobile inner tube can be used, however, they are usually too thick. If the packing is too thin, distortion will result; if it is too thick, it will usually be impossible to re-assemble."

I tried all of this, to no avail, trying to wind a small piece of rubber band around an armature the size of a pen-



06—The arrangement of the various parts in a typical magnetic type phonograph pick-up with rubber damping. (A), Various positions which the needle and armature take during the playing of a record. (B), The parts of a phono-pickup unit separated. (C), The parts all assembled together.

cil lead was useless. I gave up for a while until I found another method. Then one day it found me!

I am employed as a communication electrician in a large university hospital complex. One day while "shopping" for job material in our supply store I found myself staring at a roll of 1/4 inch latex surgical tubing. "That's it!" I screamed. I asked the storekeeper if I could have about 2 inches of the stuff. He obliged, but looked at me as if I were ready for the part of the hospital that is not for normal folks. "You hold the record for the smallest amount taken," he smirked.

That night, I took my big purchase up "*in the shack*" and got to work. The hole in the tubing was just the right size and the pliability was excellent. After about an hour of painstaking armature gap adjustment and coil placement, I was ready to put the needle in the grooves.

I selected an appropriate vintage 1926 record for the *Panatrope*, "*My Cutie's Due at Two to Two Today*" by Ted Weems Orchestra. I hit the switch, put the heavy pick up down on the record. (Incidentally, they will eventually destroy your discs, just from the weight alone.) And wow, vintage sounds from an authentic vintage all electric phonograph. How low-tech can you get?

The results were good, with minimum distortion and fair volume. I don't know the life expectancy of latex surgical tubing, but I know that I won't be around when it crumbles! Since we are on the subject of records and phonographs, I will cover some aspects of 78 rpm records and collecting next time "*In the Shack*."

Crystal Sets, Salami and the Beavers

By Pete Peterson WY7ZS

Recent excitement about the Seattle Mariners started me reminiscing about the Portland Beavers, who played in the class AAA Pacific Coast League, and the excitement they caused in my old neighborhood during their successful pennant chase in 1945.

The Beavers played at Vaughn Street Ball Park, two streetcar rides from my home. My friend Don and I often arrived early or stayed after the games, hoping to see the players as they entered or left the ball park. A casual wave and "Hi kid!" from a player gave us warm feelings that lasted for days. I must have been at the players entrance often enough for Marv Owen, who played third base and was also the manager, to recognize me because toward the end of the season he came out and gave me an autographed ball.

We were members of the knott hole gang, and our membership cards entitled us to tickets to the left field bleachers for thirty-five cents. From that distant viewpoint during the 1945 season I watched Jack Salveson pitch one of his twenty twins, and saw Ad Liska pitch a seven inning no-hitter in a Sunday double-header. Another pitcher was Wandell "Lefty" Mosser who threw a smoking fast ball but couldn't bat worth darn (there were no designated hitters in those days). The season was several months old before he got his first hit. The next morning the largest headline on the sports page was "MOSSER GETS A HIT."

The PA was heard only faintly in the bleachers so it was hard to hear who would bat next, whether a pitch was a ball or a strike and so on. Once we saw a man with a portable radio that he tuned to the broadcast of the game so he could hear what was happening on the field and that gave Don and I an idea. We couldn't afford a portable and the

expensive batteries that they used, but we did have home-made crystal sets.

The next time we attended a game we brought a crystal set, earphones, and a short length of wire. With a jackknife we scraped away the paint to leave a bare spot on the metal railing that enclosed the bleachers. Next we wrapped the wire around the railing over the bare spot several times and twisted it tight. The other end of the wire went to the aerial connection on the crystal set. The railing made an excellent antenna and we could easily hear the game broadcast. I don't recall what station it was on but I believe the announcer was Rollie Truit. Don and I took turns listening and telling the other what had been heard. Soon other fans saw what we were doing and began listening to us and asking questions. One fan bought us peanuts and another gave us soft drinks to show their appreciation.

With the incentives of hearing the broadcasts and free snacks we made sure to take the crystal set whenever we attended a game. We became quite good at announcing the game to these around us and we were usually rewarded with all the snacks we could eat. Several big spenders bought us hot dogs. Throughout the game a man kept us supplied with thick slices that he cut off of a salami of enormous length and girth.

That was fifty years ago. The crystal set was later dismantled and the parts put to some other uses. There is no longer a Beavers baseball team or a Pacific Coast League and the Vaughn Street Ball Park was razed about 1956 or 57. Professional baseball somehow isn't as exciting now, and I don't care if I never see another slice of salami again.

Tech Tips - Philco Capacitors

Ross Smith, Northern Indiana chapter of IHRS

A few years ago I wrote an article on restoring Philco radios, which included ideas for handling their black-bakelite fixed condensers (capacitors). I suggested saving the blocks and using the original lugs on top for connecting new capacitors or resistors. The old condenser in the block has to be disconnected in order to prevent shorts or leakage in the new circuit.

The first method is to remove the fine stranded wire leading inside the block by unsoldering and untwisting the fine wire on the terminal tip with a sharp instrument and a soldering iron. Once the fine wire is removed it can be pulled out of the eyelet hole with a pair of pliers. If you are lucky, the wire will break off down inside the block. At least 1/4" of wire below the surface needs to be pulled out to be sure it is no longer connected to the eyelet.

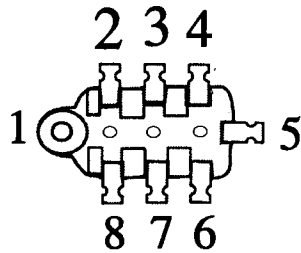
If the wire breaks even with the surface, I suggest *plan B*: use a drill bit the size of the eyelet hole to drill deeply into the block, thus cutting or wrapping up the wire. But as I restored models 20, 51, and 60 I found that even the drill bit did not insure that the wire had been severed.

It is seemingly better to use a new terminal strip, or drill out the entire rolled-over top of the eyelet, break it free for the block and let it float free (seemingly in the right place) held there by the original heavy wires. Before adding additional capacitor\ to the outside of the block (or the inside) make a sketch of the original circuit so that you will know what components are inside the block. Tracing each terminal with the schematic is highly recommended. The chart (on the following page) will help you know what each block contains. Remember that some charts include fixed resistors, as shown in the chart.

To remember the lug numbering, think of the block as a tube socket with ground on pin 1. Units with * next to their letters have dual condensers.

3615 - type (0.05 uF)

Letter used	Lugs	Condenser on resistors
B	1,3,5	1-5 250, 3-5
C	1,5,7	1-5 250, 5-7
D	1,3,5	1-5
E	2,5	2-5
F	2,3,5	3-5
G	5,8	5-8
H	3,5,8	5-8
J	1,5,7	1-5
K	3,5,8	5-8 250,3-5
L	1,5	1-5
M	2,5,7	2-5
N	1,4,7	1-4
P	1,4,7	1-4 250, 4-7
R	1,5,7	1-5 250, 5-7
S	1,4	1-4
T	1,5,7	1-5 150, 1-7
U	1,5,7	1-7
W	1,2,5	1-5
X	1,2,5,7	1-5 150, 1-7
Y	1,2,5,7	1-7 150, 1-5
AA	1,3,5,8	1-5
AB	1,4,7,8	1-4
AC	1,5,7,8	1-7
AD	3,5,8	3-5
AE	1,7,8	7-8
AF*	4,7,8	4-8 & 7-8
AG	1,3,5	1-5
AH	1,5	1-5
AJ*	1,3,5,6,8	1-3 & 1-6
AK	1,5,7,8	1-7



3793-type (0.015 uF)

Letter used	Lugs	Condenser on resistors
B	5,7	5-7
C	2,4	2-4
D	2,6	2-6
E*	1,5,7	1-5 & 1-7
F	5,7,8	7-8
G	2,3,6	2-6
H*	1,3,5	1-3 & 1-5
J	2,5,7	2-5
K*	1,3,5,8	1-3 & 1-5
L*	5,7,8	7-8 & ?-?
M*	5,7,8	5-8 & 7-8

4989-type (0.09 uF)

Letter used	Lugs	Condenser on resistors
B*	1,3,5	1-3 & 1-5
C*	1,5,7	1-5 & 1-7
D	1,5	1-5
E	1,5,7	1-5 250, 5-7
F	1,5,7	1-5
G*	1,4,7	1-4 & 1-7
H*	1,4,5	1-5 & 4-5
J	3,5	3-5
K*	3,5,?	3-5 ?-?
L	3,4,8	4-8 200, 3-8
M*	4,7,8	4-8 & 7-8

3903-type (0.01 uF)

Letter used	Lugs	Condenser on resistors
F	3,5	3-5
G	2,4,7	2-4
H	5,8	5-8
J	2,5,7	2-5
K	1,2,4,7	1-7
M	4,7,8	4-8
N	3,5,8	5-8
P	2,5,7	2-7
R	4,7,8	4-7
S*	1,5,7	1-5 & 1-7
T	5,7,8	7-8
U	1,2,5,7	1-7
W	2,4,7	2-7
X	3,5,8	3-8
Y	3,5	3-5

We've Come A Long Way

By Editor Dick Karman

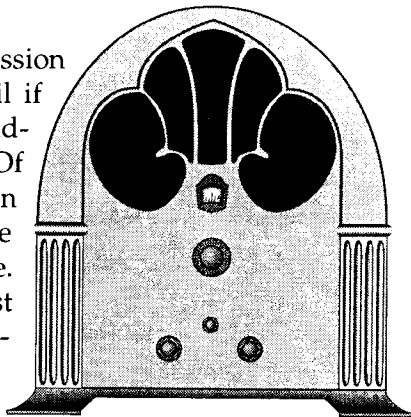
The NW Vintage Radio Society has come a long way. With over 20 years of news letter our society has seen everything except woodcut type. Looking over a history of the *Call Letter* I noticed the first issues still have some valuable information in them, but their appearance was appalling. A typewriter and a mimeograph machine was adequate (or even superior for 1975).

I remember in the mid 1980's, member Jerry Talbot said to me, "We wouldn't want our newsletter printed on a computer." Jerry was referring to the dot matrix quality of main frame computers. The laser printers and page layout of today would have to make Jerry think twice.

A few years back others started sending their material to the *Call Letter* on computer disk which established a precedent. No longer would the editor have to be chief cook, bottle washer, and typist. But the artwork and illustrations remained a problem.

Today any artwork that will be used more than once is digitized and stored in a computer; all text is typeset at 600 dpi. The NVRS will have a World Wide Web Home Page and stories are now coming to your editor on the Internet. We've come a long way !

I would appreciate any submission that you wish to make on E-mail if you have the capability (my address is chesso@teleport.com). Of course I still accept hand written material coming to me through the mail or delivered to my home. (Any other editors may request digital copies of past articles on E-mail, drop me a note.)



Swap Shop

WANTED

- Wanted: any parts or information on "NORCO" (made in Portland) 3-dial battery set; any Bremmer Tully "counter phase (sic) parts and pieces dead or alive, especially power supply parts for the military/secret service RP-6, RS-6 etc. Jim Bar-rattt, 26313 SE Leonard Rd., Camas, Washington 98607, (360) 823-4429.
- Wanted: Working or restorable chassis for 1931 All American Mo-hawk Lyric Studio Model C-6 (as in Ryders Book I page 20) James Wilson, 2221 Lynn Rd., Virginia Beach, Virginia 23451. (804) 481-6228.
- WANTED Cutting needles for Webcor type older type records. Glen Bricker 1030 N. 11th St. Cottage Grove Or. 97424 (503) 942-3717
- WANTED Philco parts. Speed Feldschau (503) 390-3928
- WANTED W.W. II and earlier military radio equipment. Forest Service radio pre-1950 fishing vessel radios, old or recent, especially Pacific N.W. built & manuals or advertising. Beginners Kit built radios with 1-3 tubes or transistors. Will pay to ship. Hugh Miller 250 S 900E #4C Salt Lake City, Utah 84102
- WANTED To borrow owner's manuals for the following test equipment: EICO, 145 signal tracer, 221 VTVM, 239 VTVM, 315 Signal Generator, 332 VTVM, DeVry 1514 VTVM, Heath kits, V7A VTVM, IT12 Signal Tracer, SG8 Signal Generator, IM11 VTVM. Cliff Glaspey (206) 353-6637.
- WANTED To borrow service manuals for Heath kits VTVM V-7A & Oscilloscope OL-1 and Hammarlund SP-600 communica-tions receiver. Fred Powell (206) 547-6695.
- WANTED five 01-A duds for restored Freshman Masterpiece. Dick Bixler, (503) 690-2557.
- Wanted knobs for 46 Philco console Also transformer for Halli-crafter S- 85. Terry Burge (503) 678-2166.
- Wanted: Crystal Sets. Have many radios to trade for crystal sets. Also wanted, Boonton 260A Q Meter. Galen Feight (503) 231-9708.

Wanted: Book *Border Radio* by Bill Crawford and Gene Fowler.
Contact M.R. Stephens, 3375 W. Valley Rd, Whitefish, MT
59937.

Wanted: Receiving and transmitting tube application notes and
other tube information from RCA, GE, and other manufactur-
ers, Ken Seymour (KH7OSM) (503) 306-7439 days/eve.

Wanted AK Breadboard - Gerry Hale (509) 627-6319

Wanted Televisions from the 30s and 40s. - Also horned phono-
graphs or parts and pieces of them - also radios from the 20s.
Chuck Seidel, P.O. Box 1385, Merlin, Oregon 97532

Wanted Western Electric Electronics parts, and speakers, horns,
also speakers and horns by Altec, JBL, Lansing or like items,
Ed Billeci, 6229 NE Oregon St., Portland, Oregon 97213 (503)
234-8453.

Wanted Telegraph Relays Bob Phelps (206) 546-5495

FOR SALE

For sale: Radios from the 30s and 40s and 50s, Televisions from
the 40s and 50s. Radio and TV tubes in quantity. **Chuck
Seidel, P.O. Box 1385, Merlin, Oregon 97532**

For Sale: Over 200,000 tubes, panels, speakers, chassis, electronic
surplus and supplies. R5-D3 Surplus. Bob Lee, 6111 SE 82nd
Ave. Portland, Or. (503) 774-6560.

FOR SALE Oil-filled Capacitors, most are between 5 and 40 Mfd.
AC or DC; AC Caps can take at least twice their rating when
used on DC. \$1 each and up - send your needs **Bud Larson,**
1325 Ridge Way, Medford, Oregon 97504; (503) 773-5214

For Sale: Radiola 18 with tubes (good condition, no tuning light
hood) \$75, a Heath kit 2 meter amateur transceiver mod HW-
30 -\$30, **Dick Karman (503) 784 4398** (leave a message if I miss
you)

For Sale: National HRO 5TA1, metal tubes, 5 coil sets (4 general
coverage and 10 meter band spread), home brew power sup-
ply and cabinet for speaker and coils. Clean and in good work-
ing order. \$350. **David Rutland, P.O. box 1084, Philomath,**
OR 97370, (503) 929-4498 e-mail WREN@PEAK.ORG.

FOR TRADE

Have a Zenith Shutter Dial, an original Audion, Dewald Catlins.
Not for sale but will trade for right crystal sets. Galen Feight
(503) 231-9708