



Vol. 2 No. 11, Dec. 1994

Editor: Ludwell Sibley

## FALL SWAPMEET NETS OVER \$700

Mike Koste

First, some sincere thank-you notes:

LARRY HILGNER: You took on a task that nobody wanted, spending all morning greeting the public and maintaining a sense of sanity and organization in the parking lot. By sacrificing your day to benefit the association, you're truly an inspiration.

ABE DIEHL: You showed up unannounced to pitch in and assist Larry with the dreaded parking detail. (Apologies for never getting around to saying "hi" and thanking you in person.)

TONY MOLETIERRE, CHARLIE CLASS and BOB KUSHNERICK: The club's restoration project ended up as an unintentional "photo finish," but finish you did. The radio looked and sounded great!

PETE GRAVE: Kept law and order in the tailgate area, was our contact to the Tyro Grange Hall people, and brought the Bookmobile as always to act as the keystone of the flea market. *Gracias!*

JAN GRAVE: We'd all starved if not for you. Jan pulled a rabbit out of a hat and managed to line up a caterer at the last minute.)

LUDWELL SIBLEY: The special "Show Issue" of the *Oscillator* is certain to help spread the word about the Club and sure to attract more new recruits.

BILL OVERBECK and DAVE ABRAMSON: Once again, the stage area was an absolute knockout! Your time spent at the club table as ambassadors of goodwill can't be overlooked. (An extra biscuit in DAVE's bowl for keeping track of the dollars and cents, too!)

SYLVIA MOLETIERRE: Bless you for your utter charm and class. Nobody can hustle a raffle ticket like you.

EVERYONE WHO CONTRIBUTED TO THE EXHIBIT: You brought out some of your truly "top shelf" gear for the contest and left scores of members and visitors in a pool of drool. *Mucho apreciadas!*

JAY DAVALER, ARNOLD FINKEL, TONY MOLETIERRE, BILL OVERBECK and JOHN KERN: The contest ribbons and the trophies (despite the typos) made us all proud to have taken part.

THE PHILADELPHIA INQUIRER: No one was more surprised than I to open the Nov. 11 *Weekend* magazine and see the swapmeet prominently listed on page 2. You can't buy publicity like that. (And we didn't.)

### NEXT MEETINGS

Tuesday, Dec. 13 and Jan. 10, 7:30 PM, at North Penn Amusements, 113 Main St. (Rte. 113), Souderton.

### JOINING THE CLUB

Just send \$10 to DVHRC, Box 624, Lansdale, PA 19446.

### ADS & SUCH

Please send ads, articles, etc., to Ludwell Sibley, 44 E. Main St., Flemington, NJ 08822-1224, (908) 782-4894.

Sentiment aside, the bottom line is this: the Fall Swapmeet in Buckingham was a financial success beyond our wildest dreams. Vendors totaling 29, over 100 carloads of visitors, book sales and another rewarding raffle left the DVHRC over \$700 in the black. (A complete financial disclosure of the event will be presented at the Dec. 13 meeting.) Incidentally, we're happy to report the our raffle winner was none other than the DVHRC's RALPH BROWN, now proud owner of a 1936 American Bosch 640 table radio. Congratulations!

Thank goodness we decided to make the radio contest a "people's choice" because, given the phenomenal variety of outstanding pieces in the exhibit, it would have been near-impossible for a committee to judge fairly. But the people spoke, and taking home the top honor

At right: the radio display, with Dan Schwartzman's "Red Star" set at lower left. Below: a typical scene in the flea market. Photos: Ted Sowirka



#### ON THE HORIZON

- |                  |   |
|------------------|---|
| <b>Feb. 25</b>   | Central PA Radio Collectors indoor meet (tentative date), Williamsport<br>Contact: Frank Hagenbuch, (717) 326-0932; or Mike Heffner, (717) 546-2907 |
| <b>March 4</b>   | NJARC indoor meet, Hightstown "Country Club," Hightstown (tentative)<br>Contact: Jim Fisher, (908) 725-7476   |
| <b>May 6</b>     | AWA Spring meet, Bloomfield, NY<br>Contact: Lauren Peckham, (607) 739-5443  |
| <b>May 13</b>    | AWA Schooley's Mountain, NJ meet<br>Contact: Lauren Peckham, (607) 739-5443   |
| <b>June 9-10</b> | MAARC RADIOACTIVITY, MD (tentative date)<br>Contact: Ed Lyon, (301) 293-1773  |

## CLUB ELECTION COMING UP

Our December meeting will feature the election of Club officers for 1995. Candidates nominated in November are: **President**, Mike Koste and Tony Moletierre; **Vice President**, Bill Overbeck; **Secretary**, Larry Hilgner; **Treasurer**, John Kern. Get out the vote!

## PROFESSIONAL CARDS?

There has been a suggestion that the *Oscillator* contain a "professional cards" section to acquaint readers with services offered by other members. If you consistently buy or sell, collect a specific line of equipment, restore sets, offer parts or plans, etc., this would be a useful way to publicize the fact. Such a "card" would look like the ones in the rear of *Antique Radio Classified*, but of course would be free. If interested, please see your friendly editor at the December meet, or mail in a proposed layout.

## MEET REPORT - HIGHTSTOWN

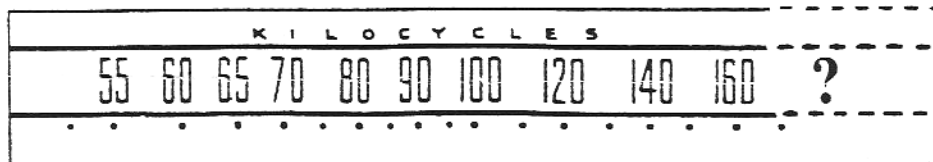
Our NJARC cousins held a swapmeet and catalog auction in Hightstown on November 5. Under excellent Fall weather, 67 outdoor tables were occupied outside, accompanied by Pete Grave's converted Bookmobile and showroom. Inside tables totaled another 20.

Walt Buffinton, auctioneer at May's Hightstown event and at Rochester, conducted the sale. The sale included 314 catalogued lots: all those that had been in the advance catalog, less three withdrawn by an owner before production of the final version, plus almost 60 added. There were another 40 bring-ins. Sales went a bit above \$8200, going to 102 bidders from 10 states. Prices were "realistic": top stuff commanded strong interest, while boxes of parts, Photofacts, and general-purpose tubes were relatively cheap. Eight late-'40s TV sets drew relatively strong bids. There were several lots of unique papers and early photos from the estate of an RCA vice president. Top items were:

Amplion AR111 horn speaker, nicked base, black metal horn, tests OK.....	\$230
Atwater Kent 10C breadboard, good tubes, tags, VG condition.....	850
Atwater Kent breadboard parts - TA amplifier unit, variometer, rheostat .....	170
Hammarlund R-274A/URR (SP-600) comm. receiver, VG, copy of book.....	210
Hammarlund SP-400SX comm. receiver, exc., orig, speaker & PS.....	160
McMurdo Silver Masterpiece II, tuner chassis only, w/tubes, good, chrome good .....	90
Millen 90800 exciter/transmitter, VG condition, book, orig. box, spare coils.....	110
Music Master rotating loop antenna, iron base, good, decal marred but present.....	180
Radiola VIIB (AR-907) thin regenerative set, panel only - less tubes and case, good .....	375
Scott/Navy RBO "morale" receiver, w/tubes, VG, copy of book .....	90
Sparton AC-62, early socket-powered receiver, good, w/ Cardon and Kellogg AC tubes .....	160
Tempo 1 SSB amateur transceiver, good, book, box, Heath power supply .....	120
Tubes, 21 big-pin types (01A, 10, 120, etc.), emission tested good.....	180
Tubes, transmitting (three 4-400s, 811A, 813, 814); all apparently new.....	90
Tubes, Western Electric WW I vintage: VT-1, VT-2, CW-1344 (215A), socket for CW-1344, good filaments.....	150

## AROUND THE DIAL . . . AND BEYOND

Mike Koste



Ever wonder why dial indicators on some old radio sets have markings beyond 1600 kHz, when there are no stations assigned to those higher frequencies? Perhaps, back in the 1930s and 1940s, some manufacturers gazed into a crystal ball and said, "Maybe, someday. . ." "Someday" is approaching, folks.

The long anticipated expansion of the AM radio dial is now one step closer to reality. The Federal Communications Commission has chosen 79 radio stations from the 688 that applied to shift their operating frequencies to the new 1605-1705 kHz positions.

Reallocations were based upon which stations should experience (or cause) less AM interference and provide better coverage to the communities they're licensed to serve. Barring any further bureaucratic delays, those stations could be sporting new numbers in as little as four months. Once licensed to the new channel, broadcasters will be permitted to simulcast from their new and current frequencies for up to five years. Among the stations moving up the dial is rocker WJDM (1530) in Elizabeth, NJ, which will soon be heard at 1660 kHz.

Chances are, your quartz-tuned digital car radio is already equipped to receive these new signals, but what

about all those vintage sets in your radio room? Do you suppose we'll see old radios with "1700" on their dials escalate in collectability?

*The new channels have the potential to let many daytime-only stations go to full operation. Others may be able to abandon the use of directional antennas to reduce interference, or to go to higher power. The ground-wave signal strength from a station at these high frequencies is markedly inferior to that at the low end of the AM band, but so is the level of static and other interference. In any event, it's surprising how many late-'30s/40s radios tune up to 1720 kHz. - Ed.*

#### INITIAL AM STATION MOVES IN THE NORTHEAST

City	Call	From kHz	To kHz
Brewer, ME	WNSW	1200	1680
Buffalo, NY	WNED	970	1680
Elizabeth, NJ	WJDM	1530	1660
Elmira Heights, NY	WEHH	1590	1620
Leesburg, VA	WAGE	1200	1700
Portsmouth, VA	WPMH	1010	1650
Salisbury, MD	WTGM	960	1670
Troy, NY	WRTY	980	1640

Source: *Broadcasting & Cable*, Oct. 24, 1994

### PHILADELPHIA AN IMPORTANT RADIO CENTER

*Radio Manufacturers' Monthly*, Oct. 1929

Recent statistics compiled from the reports of radio retailers throughout the country disclose the startling fact that approximately one-third or 32 percent of the radio receivers handled are manufactured in Philadelphia. This constitutes a real bid for supremacy as a radio manufacturing center. The investigation has also disclosed that approximately 30 per cent of the total loud-speakers handled are manufactured in Philadelphia.

Gigantic radio plants are located in Philadelphia and surrounding territory, with the Atwater Kent and the Philco plants in the Quaker City itself, while the Radio-Victor plant is located across the Delaware River, in Camden. With the greatly increased production of the last-mentioned plant, Philadelphia's bid for supremacy in the radio manufacturing field may well cause Chicago and New York City to look to their laurels.

In the radio parts field, the reputation of the Quaker City is upheld by the International Resistance Company, whose production for 1929 will run between 16 and 18 million metallized resistors. Since it is estimated that between 35 and 40 million resistors will be employed in this year's production of radio sets, it is evident that Philadelphia is supplying around 40 per cent of these important radio components.

Turning from the manufacturing to the merchandising side, Philadelphia and the State of Pennsylvania also take third place, 9 per cent of the total radio business in 1929-29 being done in Pennsylvania. This is exceeded only by California, with 13 per cent, and New York, with 12 per cent. Philadelphia alone is the third largest home radio market in the country, with 184,000 homes now equipped with radio sets, being surpassed only by New York City and Chicago.

### WANT ADS

Free exposure for your desired or unwanted stuff! We'll also send ads to the *NJARC News* for extra coverage.

**FOUND:** Radio Boys on the Pacific, thanks to Oscillator Classified. Ten more titles will complete the collection. Dust jackets preferred but not necessary.

**Needed:** Radio Boys; Lost Atlantis, With the Border Patrol, Soldiers of Fortune, and Air Patrol (all by Breckinridge). First Wireless, and To the Rescue (by Chapman), Under the Seas and Flying Service (by Duffield); Cronies and Loyalty (by Aaron & Whipple). Have dupes to trade. Mike Koste 215-646-6488.

**FOR SALE or TRADE:** *Telephony* magazine, most issues, 1959-63 (a whole copier-paper carton full), VG condition. Ludwell Sibley, (908) -782-4894.

**FOR SALE:** Emud 923 console radio-phono console, immaculate working order, \$125. Charles Class, (215) 699-7149.

**WANTED:** Cabinet for Hallicrafters SX-42. Bob Hawthorn, W2PUA, 112 Tilford Rd., Somerdale, NJ 08083, (609) 783-4175.

**WANTED:** BC-610 transmitter, pref. "E" or earlier model, in good/restorable cond. Also want BC-683 receiver, BC-924 transmitter, FT-237 mounting for same, TBW HF section or complete transmitter. Steve Davis, 705 13th Ave., Belmar, NJ 07719, (908) 280-9760.

**WANTED:** Predicta TV parts. Looking for picture-tube shroud back cover, tuning knobs, stand. Thanks. Dave Sica, 1549 St. Georges Ave., Rahway, NJ 07065-2718, (908) 392-0618.

THIS SPACE RESERVED FOR YOUR AD!

## WESTERN ELECTRIC - "SILICON VALLEY" IN THE LEHIGH VALLEY

Ludwell Sibley - with numerous ideas from Lewis Newhard

The most important specialty tube plant in the world was probably the Allentown Works of the Western Electric Company, which is still in business making integrated circuits as a unit of AT&T Microelectronics, Inc.. This facility, the first WECO plant dedicated to manufacture of electronic components, was started in 1946. It was in active production by 1948 with a force of 2500 people, with lines of tube-assembly workstations stretching down a football-field sized room. Allentown replaced the WECO tube shop at 405 Hudson St. in New York City, providing a cleaner environment for production. Simultaneously, Bell Laboratories - the design organization for WECO products - set up a branch lab colocated with the tube plant with a staff of 30 to work with WECO production engineers.

At the time, WECO's Bell System sales of tubes were multiplying. AT&T and its telephone companies were struggling with huge construction programs to fill the postwar demand for telephone service. All signs pointed toward heavier use of tubes and electronics: in multi-channel carrier systems, repeaters, tone signaling units, microwave radio systems, etc. Specialized tubes eventually found their way into submarine cable systems and, accompanied by transistors, communications satellites. Most of the new tubes would be miniature and Compactron-style types requiring high cleanliness in their production facilities.

WECO's business was changing. At the time, the company held an important market position in police radios, broadcast studio gear and transmitters, aviation radios, theater sound and public-address systems, wired-music systems, etc. WECO even made tube hearing aids and audiometers, and tried to introduce a civilian marine radar set. These product lines were later abandoned in favor of "telephone" and military equipment. Even so, there was a large demand for replacement tubes for existing equipment, a demand filled only partly by second-sources like Amperex.

The WECO product line of 1947 comprised about 169 tube types. Allentown probably never produced big power tubes like the 343AA transmitting type:

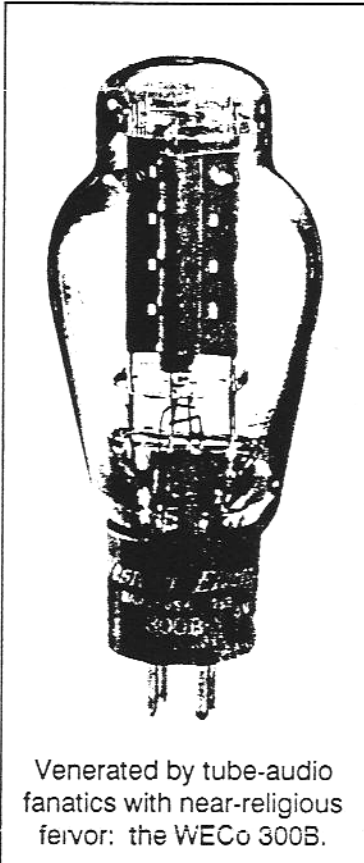
in 1948 these types were sold to Machlett Laboratories in Connecticut, which eventually became part of Raytheon. Likewise, WECO no longer made oscilloscope tubes by the time Allentown started up. Most of the specialized radar tubes, "crash" production items in WW II, were long gone.

Meanwhile, high-runner and freshly designed types came from the new plant. There were miniatures like the 403A/6AK5, the 386A and other strange-looking "doorknob" types, such regular octals as the 350A, big-pin audio tubes like the famed 300B,

Compactron-style items like the 416A, the 313C and similar cold-cathode gas tubes, etc. For microwave use, there were klystrons, traveling-wave tubes, and the high-tech 416A-416B gold-plated triodes - tubes so special that the assembler's initials were engraved into each tube and logged against the serial number for later analysis in the event of failure. There was a requirement for runs of older designs like the 310A for which there was continuing demand. Allentown was also the source for switchboard bulbs, thermistors, copper-oxide diodes, glass-sealed reed switches, and resistance (ballast) lamps.

Submarine cable systems demanded repeater tubes with extraordinary reliability and 20-year lifetime. The 175HQ tubes for the first transatlantic cable of 1956 were produced by a special shop at Bell Labs in New Jersey. But for advanced submarine systems, the 455A-455F series of tubes was made at Allentown - to even tighter requirements than the earlier units.

Less than a year after invention of the transistor, this site was designated to provide WECO's first production of the new device. Originally there had been batches of experimental "Type A" transistors made at the Bell Labs site at Murray Hill, NJ. Pilot production of these point-contact devices began at Allentown in 1951. By 1952, small quantities were being offered to the public - an article in *Popular Science* described how to order the devices (at \$6 apiece) from Allentown to build a three-transistor radio. The Type A led to the 2B, the first device used in the national telephone network. Related devices (1729, 1752) went into DVHRC member Jim



Venerated by tube-audio fanatics with near-religious fervor: the WECO 300B.



Troe's Bell Labs prototype superhet transistor radio from 1951.

At the same time, there was a government program to produce transistors for military use. The Radio Division of WECO opened a plant in a former silk mill at Laureldale, a suburb of Reading, to make 2N21s, 2N23s, 2N27s, and other military devices. This plant continued with 1N673s, 2N559s, 2N560s and other high-reliability types. By 1958, Laureldale had over 2000 employees with its own BTL branch lab. WECO moved its production of military radar magnetrons (the 5780 and 5795) from St. Paul, MN to Laureldale, adding the 7208, 8123, and similar types for such missile systems as the Nike-Ajax, -Hercules, and -Zeus. The plant was soon also making silicon transistors "passivated" with a glass cover layer oxidized onto the silicon for added reliability.

At Allentown, growth in demand for solid-state products resulted in moving about half the tube machinery to the Kansas City Works in 1958. Design control for klystron tubes like the 459A remained with Allentown until at least 1967. The declining market for tubes and further growth in semiconductors led to transfer of the last tube manufacture to Kansas City in 1972. (KC's final production lot, as late as 1988, was a run of two thousand 300Bs for the audiophile market. But derivatives of the 300B remain in production today by Vaic Valve in the Czech Republic and by Sino in China.)

In the late 1960s, the Laureldale facility was replaced by the Reading Works. (Data sheets for the 7208 and 7589 magnetrons of Dec. 1967 refer to a Magnetron Engineering Group at the Laureldale Lab.) The BTL branch lab there had taken over responsibility for design of microwave traveling-wave tubes like the 461A and 444A as of 1973; likewise, the 466A silicon-target camera tube for the Picturephone telephone of the time. A major product at Reading was metal-cased silicon diodes like the 446F, in quantities of tens of millions per year.

Thin-film circuit modules were another '60s development. These groups of resistors and capacitors were first produced at Allentown in 1962. In-line vacuum "sputtering" machines for depositing

the film went into use there in 1964, followed by a large electron-beam evaporator for the same purpose in 1968. The thin-film concept eventually led to complex systems like digital line repeaters and active filters being made in the mid-'70s as hybrid integrated circuits. In these, one ceramic plate carried resistors, capacitors, and silicon ICs. Hybrid ICs were also made for a time at other WECO plants like the Hawthorne Works near Chicago. In the mid-'70s, Kansas City made "hybrid integrated networks": plug-in replacements for miniature tubes like the 407A.

When electronic telephone switching systems became imminent, there was need for an inexpensive memory system. The Allentown Works was the production site for the "ferrite sheet" memory, a device somewhat like a magnetic-core storage unit, in which a slice of ferrite material 3/4" x 3/4" with 256 holes and plated-on wires stored 256 bits of data. First made in 1963, it was produced as late as 1975.

Bell Labs was the source of another device, the magnetic-bubble memory. This contender was in production at Reading in 1977, until replaced by semiconductor memories.

Allentown became a development center for digital integrated circuits in 1965, with analog ICs and voltage regulators being designed at Reading. This led to the first U. S. production of 256K memory chips in 1983. The first one-meg memories *anywhere* came from AT&T, but were dropped about a year later due to foreign competition.

Meanwhile, Allentown and Reading are still producing, in an industry where a production facility that was "modern" five years ago is obsolete today.

#### REFERENCES

- B. Magers, 75 Years of Western Electric Tube Manufacturing (Tempe, AZ: Antique Electronic Supply, Inc., 1992).  
F. M. Smits, Ed., A History of Engineering and Science in the Bell System - Electronics Technology 1925-1975 (Indianapolis: AT&T Bell Laboratories, 1985).  
J. Troe, "Were There Transistor Radios Before the TR-1?" *Old Timer's Bulletin*, Vol. 34 No. 4 (Nov. 1993), pp. 16-20.  
- , "Electronics at Allentown," *Bell Laboratories Record*, Dec. 1948, pp. 502-505.

## 1764 Transistor 6/52

NSNR  
2N23 TRANSISTOR  
1 EACH  
1584-PHILA-52  
WESTERN ELECTRIC CO. INC.  
LAURELDALE, PA.  
DATE PKD. 4/53

2J2N21A  
CRYSTAL UNIT, AMPLIFYING  
1 EACH  
1584 - PHILA - 52 - 31  
WESTERN ELECTRIC CO., INC.  
LAURELDALE, PA. MFG. CENTER.  
DATE PKD. 8/56

They don't come much earlier than this: labels on transistor packages from Allentown and Laureldale.