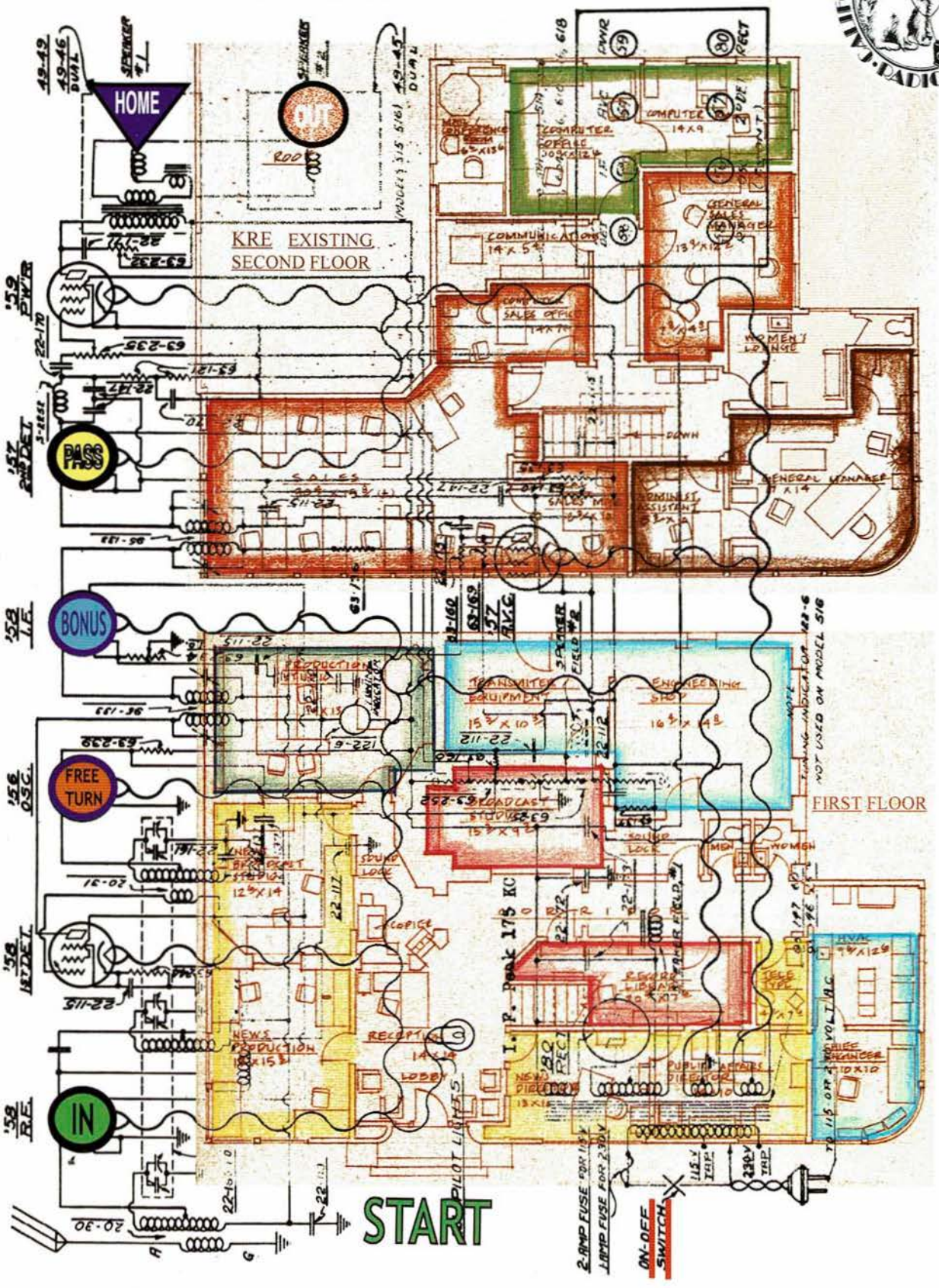
Volume 29 number 1 SPRING & SUMMER 2004

JOURNAL OF THE

CALIFORNIA HISTORICAL RADIO SOCIETY



CHRS Officers and Staff

Board of Directors:

Mike Adams	Chairman of the Board, Web Master
Steve Kushman	President, Membership, HOTLINE
Richard Look	Treasurer, IT Specialist
Scott Robinson	Vice President, Publicity
Mike Simpson	Mailing
Stephen Sutley	Journal Editor
Bill Wray	Secretary

Staff:

Paul Bourbin	Events Chairman
Larry Clark	Technical Advisor, Librarian
Bart Lee	General Counsel, Awards Chairman
Norm Lehfeldt	Name Badges
Fred Meehan	Journal Editor
Don Steger	Sacramento Chapter Chairman
Bill Wheeler	CHRS CPA

The KRE Project:

Project Manager / Logistics	Steve Kushman
Operations Manager/Safety Officer	Jerry Cantou
Finance & Administration	Richard Look
Building Planning	Fred Meehan
Museum Planning	Stephen Sutley, Bill Wray
Business Plan	Tom Bonomo
Historian / Publicity	Mike Adams
Publicity	Scott Robinson
ICBC Liaison	Jaime Arbona
Legal Liaison	Bart Lee
Broadcast Engineering Liaison	Art Lebermann
Technical Installations/Station Trustee	John Staples

KRE Project Advisors & Consultants:

Duff Axsom – Executive Director, Oakland Library Foundation
Chris Brown & Kathleen Brown – Atelier
Pat Buscovich – Structural engineer
Moe Wright – President, BBI Construction

Journal Staff:

Stephen Sutley – editor, design
Steve Parr – production
Paul Bourbin – associate editor
Bart Lee
Scott Robinson
Bill Wray

About CHRS

The California Historical Radio Society, (CHRS), is a non-profit educational corporation chartered in the State of California. CHRS was formed in 1974 to promote the restoration and preservation of early radio and broadcasting. Our goal is to provide the opportunity to exchange ideas and information on the history of radio, particularly in the West, with emphasis on collecting, preserving, and displaying early equipment, literature, and programs.

CHRS
P.O. Box 31659
San Francisco, CA 94131
415 821-9800

CHRS on the Internet:
www.californiahistoricalradio.com/chrs

Donations to the **Museum Collection** and **Archives** of historic equipment and media, including art, advertising, photos, ephemera, reference materials, related technology, inventions, and cultural artifacts:

Accessioning committee: 650 359-7787, 415 285-5817

Gould's in Stockton c.1922
photo courtesy of Jim Cirner

CHRS 2004 SCHEDULE

Check the **CHRS HOTLINE (415) 821-9800**
or our web site for the best and latest information.
www.CaliforniaHistoricalRadio.com

MAY 15th - this 'LAWN MOWER & WEED WHACKER DAY' at KRE. We need volunteer gardeners & equipment to cut the grass at KRE. This is a big job & will be a yearly event. Gas powered gear is recommended.

June 5th - Saturday, 8AM - San Rafael. City Parking Lot. Corner of Second and Lindaro. From Highway 101, take the Central San Rafael exit. Go west on 3rd. St. and left on Lindaro Sellers fee applies.. SWAP MEET

June 19th, Saturday, 9AM - Merced. Cliff's Radio Warehouse. Corner of 13th and "X". From the North, take Hiway 99 South, exit at V St. turn right and right again onto 13th St. Make the first right past the AM/PM minimarket. Sellers fee applies. Come on down to Cliff's, we always have big fun! Thanks to Cliff Berthelsen. SWAP MEET

July 3rd, Saturday, 8AM - San Francisco. St. Anne Church of the Sunset. Corner of Funston, (13th Ave.) and Irving. Funston is 6 blocks east of !9th Ave. (Hiway 1). Sellers fee applies. We will have a GENERAL MEETING after the swap, in the Cliff Heinz Room. EVERYONE is INVITED to attend and express their views and ideas. Thanks to John Wentzel. SWAP MEET & GENERAL MEETING

August 7th, Saturday, 8AM - Los Altos Hills. Foothill College, Lot "4". From I280 take the El Monte exit west. Follow the signs into the Campus. Go right at the tee, up the hill to Lot "4". Sellers fee applies. Buyer parking is free. SWAP MEET & AUCTION.

September 4th, Saturday, 9AM - Fairfield. At The Western Railway Museum on State Route 12, between Fairfield and Rio Vista. Swap Meet and Picnic. Its more than a radio swap meet. It's trains. It's antique electric streetcars and interurban trains. Take rides on this historic rolling stock. Bring the whole family. It's a great location for a meet and picnic on the lawn beneath cooling shade trees. The kids may enjoy seeing the ducks on the pond. Your battery radios and wind up phonographs are welcomed. Vintage entertainment is always appreciated. There is no sellers fee. Everyone must pay a special reduced Museum admission price for CHRS of $6. Children under 12 also have a special reduced price of $3. This fee is an all day pass for the grounds and includes the train rides, the car barns, new visitors center, gift shop, and you might get a private tour by one of the Museum volunteers. From the Bay Area, take I80 east, take State Route 12 towards Fairfield. As you see Travis AFB in the distance, the road veers right. You will then go over three hills and at the bottom of the third hill, look for the Western Railway Museum on your right. Again this year, our Members have requested a pot luck picnic, so bring your favorite dish to share with others. CHRS will provide the main course and members are enchouraged to bring drinks, salads, side dishes and dessert. Please RSVP on the HOTLINE, (415) 821-9800 or Email, (, with the number of people who will be attending, and the types of food that people will be bringing. Thanks to Paul Bourbin. SWAP MEET & POT LUCK PICNIC

October 2nd, Saturday, 8AM - Pismo Beach - Oceano Airport. 561 Airpark Dr. Take this opportunity to fly your plane to the event. Campgrounds available. We are happy to have SCARS as a participant this year. Come meet and greet our fellow radio fanatics from Southern California. And take this opportunity to enjoy the wonders of the Central Coast. This is always big fun. Open House, featuring Dan's Radio Museum, to follow at Bob's Radio and TV, 238 Ocean View, Pismo Beach. Questions? Call Dan at 805-773-8200. Thanks to Dan Steele and Ricki Glassman, President of SCARS, (Southern California Antique Radio Society). SWAP MEET & OPEN HOUSE

November 6th, Saturday, 8AM – Berkeley, CA - CHRS/KRE Building, 601 Ashby Ave. From I80 East, take the Ashby Ave./ Shellmound Exit. Take the Shellmound turnoff. At the stop sign turn left onto Shellmound. Go across the bridge and make the first left into the gate. From I80 West, take the Ashby Ave. Exit. Go under the bridge & make a right turn on 7th St. Go right on Folger. Go left on Hollis. Go right on 67th & then right on Shellmound, across the bridge and left into the gate. SWAP MEET / AUCTION

December 4th , Saturday, 2PM - Berkeley. CHRS/KRE Building. This is our annual GENERAL MEMBERSHIP MEETING & HOLIDAY SOCIAL - EVERYONE is INVITED , to express their views and suggestions about CHRS/KRE now, and in the future. AND share some Holiday Cheer with your fellow radio nuts. Bring some snacks to share . CHRS will bring the coffee. See you there!

Sacramento Chapter - Meets the 3rd Tuesday of every month, 7pm at 3256 Penryn Road, Loomis CA.

As always, no activity before scheduled start time and you must be a current member to sell. Check the CHRS HOTLINE, (415) 821-9800 or our web site, for the best and latest information.

President's Message – by Steve Kushman

WELCOME BACK CHRS JOURNAL – After a vacation the CHRS Journal is back. Thanks to Editor **Stephen Sutley** for his hard work on this issue. We are looking forward to our next issue as **Fred Meehan** takes over the Editor's duties. This means we need you to start writing articles again. Everyone has a story that needs to be told. Why not write articles for the Journal, to share with your fellow radio fanatics? Articles can be submitted to **Fred Meehan at: FredMeehan@ChevronTexaco.com**

MAXWELL LIBRARY – Thanks go out to our tireless group of volunteers who have driven many miles many times to the summit of the Santa Cruz Mountains to catalog and pack the Maxwell Library. They include **Vern Anderson, Jerry Cantou, Will Jensby, Steve Kushman, Bart Lee, Rich McCall, Kevin Payne, Scott Robinson, Mike Simpson, John Staples, Stephen Sutley, Dale Tucker, and Bill Wray.** We are finished!!! We cataloged and packed about 850 boxes of books, magazines and papers as part of the acquisition of this world class radio library. We again must express our gratitude to the late Jim Maxwell's wife Trudy for donating to, and entrusting CHRS with Jim's life work. We will be hiring professionals to move the Library to Berkeley and are still looking for many bookcases.

HAPPY 30th ANNIVERSARY TO CHRS – Our 30th year as an organized Society has brought CHRS quite an Anniversary present, the KRE building. We can now fulfill our commitment to radio education and preservation on a regular basis. By the creation at **KRE** of the **CHRS Museum, the Maxwell Library, the Dillberg Repair Shop**, the audio transfer service, etc., we can begin to tell the important stories of radio. We can begin to educate about the origins of today's technology. A reminder of what was on our cake last November 16th at our ribbon cutting ceremony: "From Wireless in 1899 to wireless today, we tell the stories of radio."

WE NEED YOUR HELP – Our little Museum Fund has grown to over $15,000, mostly due to contributions from members. We are grateful for all your donations, but we need a lot more. So, open your wallets and donate heavily because this is the real deal and every dollar will be spent to create our place in Bay Area radio history. If you want to donate your time as a volunteer on the project, you will have many opportunities to do so.

THE 3RD SATURDAY – The Board has voted to designate the 3rd Saturday of every month as a Work Day at KRE. You can drop by between 10 am & 3 p.m. to lend a hand. We will try to set up themes such as chain saw day or weed whacker day or brush & roller days. We will be doing landscaping as well as work on the building. There is plenty of work to do and we as volunteers can do a great deal of it. Our first Work Day will be Saturday the 24th of April. It's Roller & Brush Day at KRE. After the Walking Tour, (see below), we will reclaim our building by painting out the graffiti. So, bring your rollers, brushes, and long roller extensions other painting equipment & let's have fun!

WHAT'S HAPPENING NOW – We are compiling lists of possible projects in and around KRE. Once we finalize the projects and the order in which they should be done, we will know how to schedule the 3rd Saturday Work Days. We will most likely notify you by email & web site & HOTLINE as to what's going on for the next Work Day at KRE. We will also be asking you for your ideas about the uses for our new Home. We will have floor plans posted on the web site with some proposed ideas. Please examine them & you can respond to those ideas or suggest your own. We will call a meeting to discuss all the ideas.

CONGRATULATIONS – The CHRS Board of Directors is proud to present the **2003 Charles D. "Doc" Herrold Award** to the late former CHRS member **James Maxwell** & his widow **Trudy Maxwell**. Jim spent most of his life building his library to preserve radio history. And after his death, the preservation of the library in a place where all can use and appreciate it, has been Trudy's goal. CHRS is very happy to carry out her wishes and present Trudy with the Herrold Award. Also, the CHRS Board of Directors is proud to present the **2004 "Doc" Herrold Award** to long time CHRS member & former Board member, **John Eckland**. John is easily one of the most influential, gracious, and knowledgeable radio historians in the Bay Area. He also has played a major role in creating the Vintage Radio Exhibit now on display at the **American Heritage Museum in Palo Alto**. The Maxwells and John Eckland have demonstrated their dedication to preserving radio history and CHRS is pleased to have them join the following elite group. Here is a list of our honored former Herrold Award recipients:

2002 - Stan Lopes
2001 - Henry & Sharon Rogers
2000 - Hal Layer
1999 - Dick Dillman & Tom Horsfall
1998 - Will Jensby
1997 - Paul Bourbin
1996 - Henry Engstrom
1995 - Hank Olson
1994 - John Wentzel
Also - Bruce Kelly, Norm Berge, John Horvath, D. H. Moore, Mike Adams, Edward A. Sharpe, Paul Giganti & Bart Lee

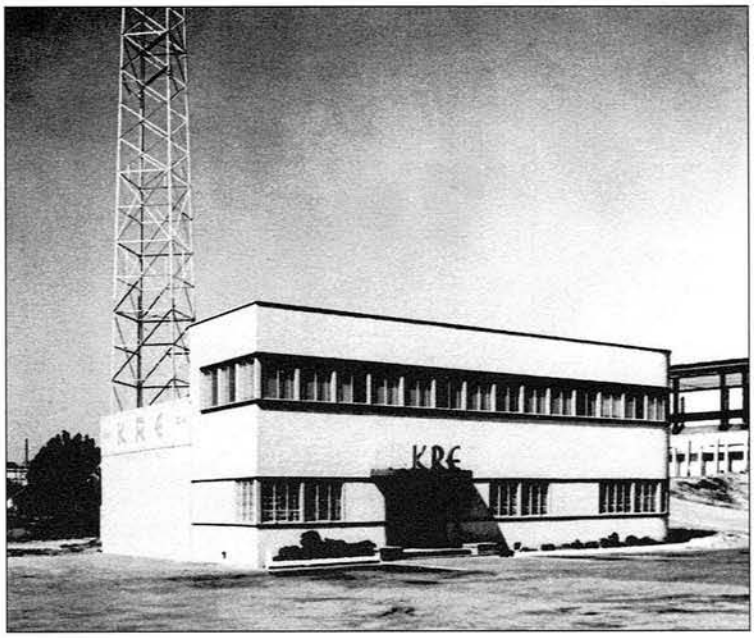
ENDOWMENT FUND – We never like to think about our mortality. But it happens to all of us. The CHRS Endowment Fund will be developed for those who want their contributions to become a lasting legacy. Were talking about large estate sized donations. This fund cannot be used for sheet rock or paint. It can only be invested as a way of perpetuating our existence. So when you think about your future, think about including CHRS in your estate planning. We will provide more details later.

WALKING TOUR - CHRS will host the **Berkeley Historical Society's** walking tour group for an historical tour of the KRE building.

THAT'S all for NOW – I hope you enjoy this edition of the Journal. This is going to be an exciting year for CHRS. Things are slowly coming together at KRE and with your help we will build something of lasting significance and have fun along the way. I'm always available for comment at **(415) 821-7671** or **kushseal@flash.net.** Have a great year. Best Regards, Steve

CHRS Takes Over KRE

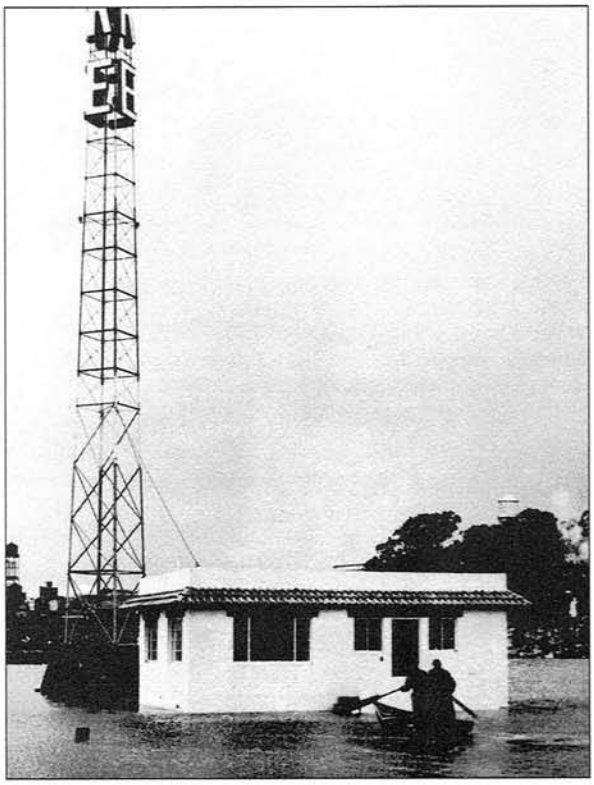
By Mike Adams
old photos courtesy of John Schneider



KRE exterior in the 50s

What do you do with an unused radio station? Normally, you tear it down and walk away, and a piece of history is gone forever. Now, after a year of negotiation, the California Historical Radio Society, CHRS, has just signed an agreement to take over the 1937 KRE building at Ashby and the freeway in Berkeley. We plan to restore it to its 1950 appearance and use it for Society headquarters and a Bay Area radio museum. We need plenty of help from the radio history community. We need ideas, labor, and money.

CHRS was chartered 30 years ago as a non-profit radio history organization, our original goal the study and preservation of old radio technology. Although we are Bay Area based, we were, until KRE, "virtual," on the Web, in a newsletter, a San Francisco mailbox, but with monthly meetings, flea markets and displays throughout Northern California. We were a major contributor to the very fine old radio exhibit at the San Francisco Airport several years back. We have a lot in common with Broadcast Legends members. Our president is Steve Kushman, a long time KGO video editor. Many of our members are current and retired broadcasters and engineers. Like you we love radio.



Floodwaters, original transmitter building c.1937

KRE, licensed in 1922, and in its current location since 1937, followed the path of low power, local channel AM stations in the 1970s - format changes to try to hang onto a dwindling audience, the challenge of FM, deregulation and ownership changes, automation, and the fact that many of these stations were worth more as real estate than broadcast properties. KRE was different. Built on landfill in the Berkeley wetlands, its location is perfect for AM transmission, but as it became surrounded by freeways in an industrial neighborhood, the site became undesirable as a location for the studios, sales and promotion offices of its FM sister, KBLX. While KBLX moved to San Francisco, the building remains viable as a transmitter site for KRE (now KVTO) and KFRC-AM.

We approached the owners of KRE and KBLX, Inner City, with a proposal to restore and occupy the studios and offices and dedicate them to Bay Area radio history. Attorneys worked out a long-term lease agreement: CHRS will not pay rent but we are responsible for insurance, repairs, security, and the non-transmitter part of the utility bills. Because some of our members are local broadcast engineers, Inner City trusts us to coexist with and respect the KFRC/KVTO technical facility. Visitors can look through the old studio window and take transmitter readings every half hour if they feel nostalgic.

But now comes the difficult part, the restoration, and this is where we need help. As the photographs show, the building is a graffiti magnet, and while Caltrans is now repairing the fence, neighborhood kids seem to like this formerly-abandoned location as a giant art studio. We will be installing security devices and painting with graffiti-proof paint, but keeping the exterior clean will be a challenge. We hope to have enough events and traffic to solve some of these problems. We hope to see fans of old radio happily picnicking on the banks of our lake after touring our radio station museum.

control room c. 1930s

Alas, we are not a wealthy or well-connected organization, and for 30 years we've only needed member dues to pay for site rental and newsletter printing and mailing. Now we must quickly shift gears and find supporters who can donate paint, carpet, windows, and carpenters and other restoration artists who can gradually bring KRE back to the way it looked in 1950. We also need photos of KRE in the 40s, 50s and 60s. We have excellent history of Bay Area radio with a few KRE photos, but we need much interior and exterior detail to make this tattered station sparkle again.

Here is an appeal to my brothers and sisters of Broadcast Legends: Were you there? Did you once work for KRE? Did you take any photos? Do you have any broadcast studio technology, signage or memorabilia that you would want displayed in our museum? We want KRE to be a museum honoring all of Bay Area broadcasting. We want you to be a part of this. We can't do it alone.

As found c. 2003

See our Website: www.CaliforniaHistoricalRadio.com for more details, the proposal, the lease signing event, a history of KRE, and many photos of the ongoing cleanup and restoration of KRE.

Harvey Stone (ICBC) and Steve Kushman (CHRS)

(Adams is a Broadcast Legends member, a DJ on legendary AM station WCOL in Columbus OH from 1963-1974, now the chair of the department of Television, Radio, Film and Theatre at San Jose State, also the advisor to its KSJS-90.5 FM. "Hey, if you can't play the hits you teach 'em." He is also the Chairman of the Board of the California Historical Radio Society)

Our Donors

The California Historical Radio Society gratefully acknowledges these dedicated individuals and groups for their commitment to creating this center devoted to Radio by contributing at least $1000 to the project. Thank you for making our vision a reality.

CHRS Sacramento Chapter –	$1000	**Scott Harvey –**	$1000
Jaime Arbona –	$1000	**Fred & Corrine Kirsten –**	$1000
Paul Bourbin –	$1000	**Stan Lopes–**	$1000
Jerry Cantou –	$1000	**John Wentzel –**	$1000
Geoff Day –	$1000		

Museum Musings

Stephen Sutley

The Days Run Away Like Wild Horses Over the Hills
Charles Bukowski (1920-1994)

The idea of creating a museum from the things we do naturally as collectors and preservationists is an act of passion. In the pre-internet era, collecting things locally was often how we learned about the detailed history of radio, audio, television, and related technologies. Reaching out, we find others drawn to the hum and glow of vintage electronics. Suddenly a readymade community of collector technophiles and other facilitators surface. And we also find ourselves as middlemen between someone's debris box and our storage areas. Sometimes the things come lovingly from the original owners, other times emerging from much further up the collecting chain.

Museums, like people, come in many forms and rise from collections – even as collective memories and ideas. It is a way of getting a comforting grip on history, ourselves, and sharing our finds. Museums offer a place to tinker with what we know, marvel at the achievements of others, and nurture insights into the workings of things. And in a larger sense for us, celebrate the nature of technology in shaping culture. In turn, a museum offers the community at large a glimpse of our passions and lends a noble model, diversity, and selfless application to the enterprise of collecting.

The community benefits as we grow from a loose family of enthusiasts into a place for people to gather for activities, research, and exhibits. Ideally, our motives for preserving the past will evolve into a strategy that directly benefits the public as well as CHRS members. The museum will conserve our collection of artifacts and become a lasting asset. There are many amazing private collections on the West Coast. If we could get even *one* "museum quality" piece from the range of collectors in our areas of interest, our exhibits could be world class. In context, our *stuff* can become the best evidence of our commitment to the art, culture, and science of radio technology.

Museums have become big business and are moving away from the academic model. The competition for entertainment is fierce but shouldn't distract us from our pursuit of a refuge for the things we treasure. It is a given that we will not fund our museum by admission tickets. We will need to grow through global fundraising activities and the generosity of our donors. It is our unbelievably good fortune that **Jaime Arbona** with his connections in the radio broadcasting industry found us the stylish KRE building in Berkeley as a place to shine. **Steve Kushman**, **Mike Adams**, and **Bart Lee** helped to sell the idea and worked out a licensing agreement that expires in ten years. The KRE renovation project offers CHRS increased visibility and a rare opportunity to showcase our interests in broadcasting as well. And moves us closer to owning our own museum and archives someday in the foreseeable future.

The reality is that any type of not-for-profit radio technology museum will have to survive on the generosity of donors and volunteers. Raising funds, in museum terms, "development" is typically the biggest obstacle. As shown by numerous small museums in the Bay Area, the dedication of a band of enthusiasts can turn passionate ideas into an actual site. There have recently been a number of buildings in San Francisco donated to local museums including the Old Mint and YWCA in Chinatown.

Paul Bourbin, longtime CHRS president, has stressed the goal of having a permanent home for CHRS. Paul's compelling article in the CHRS journal, "Then, Now, and in the Future," articulates the need of setting the stage to attract participation and financial support before formally asking for outside help, whether from trusts, grants, or private donors.

Members have generously donated time, money targeted for the museum fund, and a range of radio gear: alas, often stuff that didn't sell at the swap meets and mostly suitable for our auctions. If believers can't donate time and experience, then a generous donation of artifacts and/or seed capital will solidify our dream of a creating a museum. It is nearly impossible for us to create and sustain a collection suitable for exhibition without a "permanent" location of any kind.

The **Dick Dillberg** estate and other recent donations of test equipment, hundreds of rare tubes, parts, manuals, and coveted radio gear will allow us to create an area devoted to restoration and conservation.

CHRS received an incredible library and archives from **Trudy Maxwell** in memory of her late husband **Jim Maxwell,** W6CF. Jim Maxwell was at the forefront of the contemporary amateur radio movement and served as Director of the American Radio Relay League in the Pacific. The stunning collection of books, magazines, technical literature, amateur radio archives, ephemera, and Ham radio gear is now the core of CHRS' future library/archives.

Please contact us if you have a lead on suitable shelving or would like to help organize the collection.

Museum continued

Armando Garaventa donated WWII-era military radio gear, books, a 1940s radio, used tubes, and misc. radio accessories with the help of **Frank Norick**, former director of the Bancroft Museum in Berkeley. Of note are a BC-342-N in choice original condition (version with AC power supply) that may have been used in a half-track and an U.S. Navy C-38/ARC-5 remote control unit for transmitters used in WWII aircraft. Though Mr. Garaventa is not an active member of CHRS, he generously supports our preservation efforts and shares our goal of developing a museum quality collection for public display. CHRS extends a huge thanks.**Vern Anderson**, one of our resident military radio experts graciously agreed to look over the BC-342 and C-38 and act as an interim caretaker for CHRS. By chance, **Richard Mollberg** put together a display of ARC-5 equipment for display in honor of **Henry Engstrom** at the Military Radio Restoration Group meeting in San Luis Obispo. CHRS agreed to include the C-38 that is in near NOS condition into Richard's exhibit and share this rare unit with other radio buffs. Perhaps in the future, CHRS' museum can continue to explore the pivotal developments in military radio and some of the people behind the scenes.

BC-342-N

C-38/ARC-5

Vern Anderson and Richard Mollberg in Oakland

Storage!

Exhibit display cases:
CHRS owns half a dozen large exhibit display cases (6' and 32" square) and one 8 footer that I cajoled from SFO's international terminal. Again, thanks go to **Bart Nadeau, Bob Immergluck, Jerry Cantou**, and **Steve Kushman** for helping to transport these in the crunch time and time again. The **Western Railway Museum** in Rio Vista stored them in a huge warehouse they acquired, but repairs needed to be made and we have relocated them to a radio station in the Bay Area. These are big, heavy, and fragile. Any leads for storage will be highly appreciated. These are very suitable for displaying radio exhibits in commercial or public spaces. Any ideas for sharing radio with the public?

Dolby Labs Museum

Success! **Bill Wray's** years of persistence and curation of Dolby-related history produced an in-house museum in San Francisco showcasing Ray Dolby's achievements in noise reduction technology. Bill's exhibition starts with tube gear from the 1960s and displays pivotal developments, prototypes, and the early cornerstones of the music, broadcasting, and film industry. A longtime CHRS member and devoted radio historian, Bill's push to preserve Dolby history and rally the resources needed to create a museum are inspiring and a local real world example of a busy visionary. CHRS is very lucky to have Bill's support and expertise, and leadership. Big congratulations.

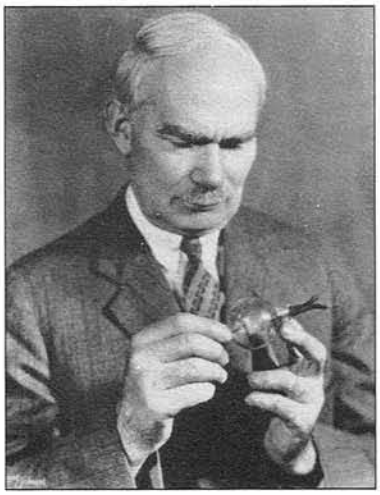
Were you as surprised as I was to see a memorial to Marconi right here on Telegraph Hill? By: Russ Turner

In San Francisco, there is a memorial to Marconi on Telegraph Hill, put up in the 1930's during a visit by Marconi, by a newspaper and I think the Sons of Italy. We could do a commemoration there, perhaps with some community support (Telegraph Hill Dwellers) and press coverage. Marconi put his transmitter up in Bolinas in 1912, which is now part of the Point Reyes National Seashore (GGNRA) and the National Park service is interested in the history of the site (they are working with CHRS members Tom Horsfall and Dick Dillman on a museum site). Marconi was, of course, the beginning of maritime radio. We could play with the spark transmitter again; real Pirate Radio! Anybody want to take on the project and make a media event?

CHRS' archives have been carefully stored and meticulously organized by **Larry Clark** for many years. We owe him our highest tribute for making room in his home and responding to radio servicing questions. Larry continues to offer this service, please give him thanks for his generosity in sorting through and organizing CHRS' technical print resources.

One Hundred Years of Radio

by Mike Adams



Lee de Forest
photo courtesy of the Perham Foundation

BROADCAST HISTORY BY DECADES:
Technology, programming, business

1900-1910 - BIRTH

1. THE INVENTION OF THE WIRELESS TELEGRAPH:

Guglielmo (Bill) Marconi, born in Italy of an Italian father and British mother, he approaches the Italian Government with his ideas for an invention that will (a) replace the wired telegraph, (b) help ensure the safety of ships at sea. Ships were the major form of commerce between countries. The Italians are not interested but the British are; Marconi sends, in 1900, his famous "S" (dit dit dit) in Morse code from England to Newfoundland, Canada. He originally wants to send from England to Boston but a storm blows his antenna down and he moves to Canada.

2. FROM WIRELESS TELEGRAPH TO WIRELESS TELEPHONE:

Inventors like Lee de Forest, Reginald Fessenden, Charles Herrold want to find a wireless substitute for the wired Bell telephone. The human voice could add a nuance to communication not possible with the telegraph, but people like Marconi decry it, saying, "if it is not coded telegraph, it will not be private and others will be able to hear it."

3. THE FIRST BROADCAST:

In 1906 at Brant Rock MA, Fessenden plays his violin, sings a song, reads a bible verse or two into a wireless telephone of his own invention. This is the first broadcast and it happens Christmas Eve, 1906. It is a broadcast because it is designed for more than one listener (not 2-way) and it is pre-announced. He doesn't continue. His goal is to prove to financial backers that such a device is possible.

4. LEE DE FOREST:

Probably the most important person in the development of radio, de Forest does two important demonstrations of wireless telephone; (1) in 1907 he equips the Navy fleet with his wireless telephone, an arc transmitter, and plays phonograph records to shore stations as the fleet comes into ports like San Francisco, and (2) in NYC beginning in 1910, he broadcasts on several occasions well-known opera singers to an audience of reporters. He wants to bring culture into homes.

5. CHARLES HERROLD:

In San Jose, Herrold in April 1910 is quoted in a notarized affidavit published in a national magazine, "we have give wireless phonograph concerts to amateur men in Santa Clara Valley." This is one of the very first published references to what we now know as the activities of radio broadcasting. Herrold operates one of the first wireless training schools and his students use an arc transmitter to entertain their friends.

1910-1920 - EXPERIMENTATION

1. CHARLES HERROLD:

Between 1912 and 1917 Herrold is broadcasting music and talk on a regular schedule to a growing San Jose audience. He sets up listening stations in a local music store, he builds receivers for friends and family, he takes phone requests for records. All this is reported in the *Mercury Herald*. He also broadcasts all day, every day from his San Jose Wireless College to receiving stations at the Pan Pacific International Exhibition in 1915. This is the first time most peo-

ple actually hear radio broadcasting, many don't believe it. He uses an arc transmitter and he is received using crystal sets and earphones.

2. WORLD WAR ONE:

All amateur wireless stations are ordered shut down, silent, so that the Government can use radio for defense purposes. The war is important to radio technically as the vacuum tube, invented earlier by de Forest is improved for war communication, and all other radio patents are pooled for defense reasons.

3. LEE DEFOREST:

In November, 1916, de Forest broadcasts the Wilson-Hughes election results. After the wartime ban on wireless ends in 1918 he sets up a station in High Bridge NY, and broadcasts music, news, election returns, etc., to NYC, this time using his vacuum tube as a transmitter. The Federal Radio Inspector shuts him down saying "there is no place on the ether for entertainment." Most still believed that radio should be for two-way communication, and there was general agreement that the Navy would be in charge of all radio. De Forest comes to San Francisco and sets up another station in 1919 and broadcasts daily.

4. FRANK CONRAD:

Meanwhile, in Pittsburgh, PA a Westinghouse Corporation engineer named Frank Conrad had been allowed by the Signal Corps to be on the air during the war to develop the de Forest vacuum tube into a transmitter for the war effort. He uses a phonograph to test the audio; he gets calls from a few experimenters who are, in defiance of government order, illegally listening to his tests. He plays records to this clandestine audience every Saturday Night.

5. DAVID SARNOFF:

In a 1919 memo to his superiors, Sarnoff suggests that a "Radio Music Box" could be manufactured and sold to consumers for home entertainment in the manner of the piano.

6. RADIO CORPORATION:

Under a 1919 government-sanctioned agreement, the Radio Corporation, RCA is formed to manage the patents for the technology of the receiver and transmitter. General Electric (alexanderson Alternator) is allowed to make receivers to be sold under the RCA name, Western Electric is allowed to build transmitters and AT&T (de Forest vacuum tube patents) is allowed to engage in "toll broadcasting" and "chain broadcasting." Later, Westinghouse (Fessenden and Armstrong patents) reluctantly joins the agreement.

1920-1930 - RADIO ARRIVES

1. LICENSED RADIO BROADCASTING:

Conrad's company, Westinghouse, asks him to go on the air on a regular basis to send out music and they'll sell radios to pay for the service. They apply for a commercial radio license and in November, 1920, KDKA goes on the air to broadcast the election returns of the Harding-Cox presidential contest. Westinghouse takes out ads in the newspaper advertising radios for sale to the home consumer. This station receives the first official government license. The dark years of war give way to peace and prosperity.

2. BROADCASTING'S DECADE: In the first year, all so-called broadcast stations were forced to share a single frequency, 350 meters. Within a few years there are hundreds of stations entertaining thousands of people who buy or build their own receivers, mostly crystal sets with earphones.

3. TECHNOLOGY:

The decade begins with people listening to home made crystal sets with headphones, progresses to large battery-operated sets with dozens of dials and a horn speaker to electric console radios designed as fine furniture, single knob tuning and good quality loudspeakers.

4. ADVERTISING:

By 1923, WEAF in New York accepts the first "radio ad." Because this station is owned by AT&T, it is the only station allowed to engage in "toll broadcasting" under the RCA agreements. Other stations are already advertising because no one can stop them. Many stations are owned by stores and businesses anyway and their only reason for broadcasting is to sell something.

5. NETWORKS:

Having broken the AT&T monopoly on "chain broadcasting" NBC and CBS are formed as the first radio networks by the late 1920's.

6. REGULATION:

The radio dial is filled with hundreds of un-regulated transmitters, many interfering with each other to the point where no one can get clear reception. The Federal Radio Commission is formed and the Radio Act of 1927 is passed which reassigns stations to clearer frequencies, and for the first time makes radio stations operate in the public interest, convenience and necessity. The decade ends with radio as a fully formed industry. A racist program, Amos and Andy is the top-rated radio show. The roaring 20's will give way to the great depression. A major social change is on the way.

1930-1940 - RADIO MATURES

1. RADIO AS A BIG BUSINESS:

The depression notwithstanding, people begin to listen to, even depend on radio to entertain, to uplift them during a major economic crisis. President Roosevelt, FDR, is the first "radio president" and his "fireside chats" help to give confidence to Americans during their darkest hour.

2. BIG SHOWS:

Big stars, big salaries, big unions; programming is national over NBC red & blue, CBS, Mutual networks. Programming consists of variety, comedy, soap operas, serious drama, live music, and quiz shows.

3. THE DECADE OF THE SPONSOR:

Advertisers, through their agencies, own and control entire programs, hire and fire talent. Shows are named for the sponsor.

photo courtesy of Jim Cirner

4. THE FCC IS FORMED:
In 1934, the new agency replaces the FRC and regulates radio, telephone service, etc. Their mandate is very similar to the old FRC. At the start of the decade they try to clean up the content of broadcast ads and claims, even take a few self-described "radio doctors" off the air. By the end of the decade they will complain that radio is not local enough, that the unlicensed national networks control the programming but the stations are licensed to serve local communities.

5. PRESS-RADIO WARS:

Newspapers fear that the immediacy of radio news will drive them out of business. For a while, they refuse to let radio stations read from their pages until after the papers hit the streets. Eventually AP and UP are formed, and CBS radio and others form dedicated news departments.

6. RADIO-MUSICIAN WARS:

The musicians union, trying for even more power refuses to let their musicians perform on radio until new agreements are worked out. Some stations play records of foreign artists not covered by the AF of M.

7. EDWIN ARMSTRONG INVENTS FM:

Only the engineers care that there is a new delivery service that eliminates the static and noise and poor frequency response of AM. The owners of broadcast stations are making a fortune and they don't want to make existing receivers obsolete. FM will sleep until the 1970's.

8. WAR IN EUROPE:

Radio news folk like Walter Cronkhite, Edward R. Murrow, and others build their reputation as the first radio journalists. By the end of the decade radio is number one for news. It's instant, it's exciting, it's scary, it's war.

1940-1950 - RADIO SERVES

1. WWII: Radio is the voice of the war effort. Entertainers soothe a confused public, even make them laugh, news reports inform. Radio helps unite the nation.

2. TELEVISION STANDARDS:

In June 1941 the NTSC determines that television will be 525 lines, 60 fields, interlaced scanning. In December, 1941 Pearl Harbor involves this country in the War and all industry is converted to war materials.

3. POST-WAR AFFLUENCE:

After the war ends in 1945, Johnny comes marching home, gets a good job, gets married, buys a home in the suburbs, buys a car and refrigerator, even a new radio or two. The babies that result will become a major population by the mid-50's.

4. TELEVISION ARRIVES:

By the late 1940's, television was catching on. The years between 1948 and 1952 are growth years for TV like the early 1920's were for radio. TV is black and white and the programming is mostly controlled by the same networks and sponsors as radio. Rural areas will not get TV until the decades end.

1950-1960 - RADIO STRUGGLES

1. RADIO WITH PICTURES:

All the big stars and programs and advertisers that made the 1930's and 1940's the "golden age of radio" defect to TV. Radio now has to localize, even play records.

2. MOVIES SUFFER:

TV is such a novelty that people actually stay home from the movies. The movies fight back with gimmicks like wide screen, cinemascope, 3-D, big spectacles. They forget about the scripts.

3. ROCK AND ROLL EMERGES:

By the mid-50's, white entertainers who imitated and emulated black R&B singers from the 1940's were starting to be heard in big cities like New York and Cleveland. Elvis Presley and others were getting air play and selling records. Local radio is changed as some disc jockeys begin to sell records and mirror and influence the emerging youth culture, the baby boomers (born beginning in 1946) growing up into consumers.

4. RADIO IS ALMOST SAVED:

By the end of the fifties, rock and roll artists would be on Ed Sullivan. Imagine radio, being both on and ultimately being revived by the medium that almost killed it ten years earlier.

5. FORMAT RADIO:

The story is that a person named Gordon MacClendon was sitting in a restaurant in the mid 1950's, suddenly noticing how the young teens-to-be-soon-to-be-known-as-baby-boomers would always play the same songs over and over again on the jukebox. Why not make radio programming more predictable, maybe profitable.

6. RADIO NETWORKS EVOLVE:

With all the entertainment programs going to television, and with most radio becoming disc-jockey-based, radio networks are left with only news.

7. SPOT RADIO:

By the end of the decade, entire sponsor control of programming gives way to advertisers being able to buy a 30 or 60 second spot within a program. Now an advertiser could "participate" in the sponsorship of a program instead of owning it outright. Partly this change was hastened by the "blacklisting" of writers, announcers and musicians by advertisers who believed that some radio people had communist ties, wanted to overthrow the government. The Cold War.

photo courtesy of Steve Cabella

1960-1970 - RADIO REINVENTS

1. TOP 40 AM DOMINATES:

Probably based on the early work of thinker/programmers like MacClendon and Bill Drake, hundreds of AM stations embrace a "top-40 time and temperature" format. The saying, "be bright, be brief" was, it seemed, posted in every control room. Stations played three minute songs. The music was still controlled by cynical old white men. There were lots of jingles and promotions. Programming, music and contests are now targeted to a specific age group (12-35) based on demographic research showing this group has money to spend on good and services. The newly affluent middle class.

2. BEATLES:

It's 1963, and just as the AM top 40 stations seemed to be sounding tired, a group of British acts arrived to influence the world music scene. Led by the Beatles and the Rolling Stones, many American stations even hired British DJs. For a few years, AM top-40 would rebound because of the new music.

3. UNDERGROUND AND PROTEST:

The stage is about to be set for big changes. The audience would provide the catalyst for change. Suddenly there is much more music, much of it bold, most of it not controlled by traditional companies, much of it coming out of San Francisco and LA, much influenced by the 1968 Monterey Pop Festival. Campus war protests as the baby boomers hit college and fear the draft. Drugs and sexual experimentation.

4. FM MAKES A COMEBACK:

For a system that was invented nearly 40 years earlier, it took a long time for FM to overtake AM as the most listened to radio service. AM didn't even realize it, but FM was creeping closer. The music was better, it demanded a delivery service that sounded as good as the home audio system. AM stations still refused to play the new music from albums, often with songs longer than three minutes, were suddenly facing new competition from FM station that would play the music.

1970-1980 - RADIO BORES

1. RADIO IS PREDICTABLE:

AM Top 40 begins the decade with lock on the ratings. Even though its sound was stale, in some markets more than 50% of the people using radio are still tuned by habit to that "one big legendary AM station." and everyone else was sleeping. By the middle of the decade most of these major stations were struggling. AM stations even tried to meet the challenge by going "stereo" but no one cared. The big FMs would rule by the decades end.

2. RADIO MAKES LOTS OF MONEY:

The big music stations, once AM and now FM were making lots of money. There are plenty of listeners and times are good as far as jobs and money. Advertisers want to buy radio.

3. FORMATS FRAGMENT:

There are no longer just two formats, top-40 on AM and "progressive rock" on FM; now there are soft hits, old rock, new rock, classic rock, disco, young soul, old soul, Latino, etc. There are a lot more stations and each one has only a small segment of the audience.

4. RADIO NETWORKS RETURN:

With inexpensive satellite technology available to every station, hundreds of new radio networks emerge and die, mostly offering music formats delivered by big city DJs. Smaller stations automate with them but it makes the station less local-sounding, less-appealing to listeners and sponsors.

1980-1990 - RADIO STRUGGLES

1. DE-REGULATION: 4. RADIO NETWORKS RETURN:

With inexpensive satellite technology available to every station, hundreds of new radio networks emerge and die, mostly offering music formats delivered by big city DJs. Smaller stations automate with them but it makes the station less local-sounding, less-appealing to listeners and sponsors.

1980-1990 - RADIO STRUGGLES

1. DE-REGULATION: The Reagan administration de-regulates the industry. Stations now have to satisfy the demands of the marketplace instead of the demands of Federal regulation. Freely Translated: if it doesn't make immediate money for your station, don't do it. News and public affairs suffered. If you were a news writer, reporter and reader as every station had to employ in the 1970's, now your station was no longer required to have news. You might have to go back to teaching.

2. BUY-SELL BUY-SELL:

Like the house you bought for a high price in the late 1980's, the radio station you also bought is worth less than you paid. This means cutbacks, more automation, less news and public affairs types. In the decade of the 1980's almost half of the radio stations changed hands.

3. NEW OWNERS, NEW CHALLENGES:

For young people seeking a career in radio the good news was this: If you are good at sales, promotion or production of promotions, you will be in demand. This is still true today.

4. A SMALLER PIE:

The number of stations swelled to 12,000 and in major and large markets, there were perhaps 100 to 200 stations vying for listeners. The era of Niche Programming and formats begins and now there is a format for every narrow interest. Again, less people have to do more. To succeed you have to be above average, tenacious, persistent.

5. AM TRIES A COMEBACK:

Helped with new technical regulations, promises of fewer stations and an expanded AM band, the FCC and station owners try to save AM one more time.

1990-2000 - RADIO COMPETES

1. AUTOMATION SAVES THE DAY:

Let's face it - If less people can do more work, it will happen. New radio station owners want to cut costs, use automation to run three stations at once. One office, engineering, announcing staff, three stations at once have no union problems because the unions in radio are practically irrelevant. The new automation systems are flawless compared with the older ones.

2. NEW GROUP OWNERS & DUOPOLIES:

One company can now own 25-25-25 and in San Jose and San Francisco some companies own at least three stations. It's like a monopoly. In this market KARA, KLIV, KRTY can operate with one staff and part of the operation is automated.

3. DIGITAL TAKES OVER RADIO TECHNOLOGY:

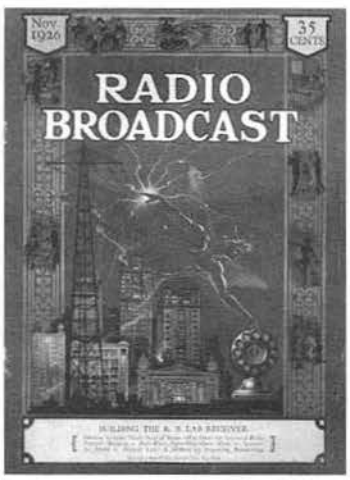
Now an entire day can be stored, edited and broadcast using the hard drive of a computer. Production that used to involve splicing tape is now done with the click of a mouse. Analog devices like turntables and cart machines will disappear by 2000, to be replaced with computer memory.

4. NEW DELIVERY SERVICES:

Digital stuff, DBS, DMX; how the marketplace will determine the fate of future non-FM delivery services. Remember, AM is still around after almost 100 years. And just like the transition to television, the current owners want to be first in line when licenses are issued for these new services.

5. TALK RADIO'S DECADE:

Rush Limbaugh, Conservative politics, and suddenly many struggling AMs have finally realized that their audio quality can never compete with FM for music.



courtesy of Paul Bourbin

The Philco Corporation
1892 – 1961 Historical review series Part II

By John Paul Wolkonowicz

All through this depression, we have held to the idea that it was better to go steadily forward on our long-time program... we must give the public new value for its money.
Philco President James Skinner in Forbes magazine 1931

Part One of the history of the Philco Company described the rise of the Spencer/Helios Electric Company (1892) from an arc lamp manufacturer into the Philadelphia Storage Battery Company (1906) that capitalized on the explosive growth of radio and broadcasting at the start of the 1920s. Philco entered the radio business in 1928 when AC-powered radio sets made battery power nearly obsolete. Philco's marketing savvy and line of low cost "midget" radios catapulted Philco to the top sales position by 1930. Philco entered the vacuum tube business, formed the Transitone Automobile Radio Corporation, and expanded its 1931-1932 radio line using superheterodyne receivers in striking "baby grand" cabinets

1932 – THE DEPTH OF THE DEPRESSION

For 1932, Philco continued the successful marketing and operational strategies that had worked so successfully in 1931. But due to economic and industry conditions which prevailed in 1932, even Philco's dynamic management team couldn't prevent a rather severe reduction in output and profits.

Philco's advertising plans for 1932 were quite ambitious. In 1932, Philco instituted its long time policy of showing mainly the high-priced models in magazine advertising to establish an image, then pushing the price leaders in newspaper advertising to get the customer into the dealer's store. Philco's magazine advertising in 1932 usually featured an eleven-tube console priced at $150.00 and stated "PHILCO - A Musical Instrument of Quality."

Philco emphasized tone quality in these ads, and in this area, they were ahead of nearly all their competition. To Philco should go the credit for introducing the concept of High Fidelity to the American public. In January, 1932, Philco introduced the revolutionary (for the time) Model 112X. The X in Philco's numbering scheme signified an inclined sounding board deluxe console with an "echo absorbing" screen at the back of the cabinet. The idea behind the inclined sounding board was based on the principle that high-frequency sound waves are very directional. By sloping the front of the console and inclining the speaker up towards the listener, Philco claimed that more high frequencies were heard. In addition, low-frequency response was reinforced by the larger sounding board, the echo absorbing screen and an improved output stage. The 112X was Philco's first attempt at high fidelity- a theme they would stress even more heavily over the next several years.

In order to enhance the successful selling-up strategy begun in 1931, Philco further proliferated its model line for 1932-33 by introducing twenty-six new models at the June Trade Show. These models ranged from the four-tube Model 80 B midget at $18.75 to the imposing eleven-tube, dual speaker Model 15 DX at $250.00 That $18.75 midget bothered Jim Skinner. He had felt that $36.50 was as low a price as any set should sell for, but in response to competition, Philco had introduced this model hoping to use it only as a price leader. But in late August, 1932, the Emerson Radio & Phonograph Company of New York introduced a tiny AC-DC, transformerless $25.00 radio called the pee-wee which immediately caught the public's fancy. By the end of 1932, pee-wee radios were selling for as little as $9.95. Although Philco refused to market a set at less than $18.75, Skinner was nevertheless sickened when sales of the Model 80 B took off. During the last week of 1932, Philco sold 17,000 80 B's - half of its entire sales for the week![1] When the results for 1932 were totaled, Philco's sales had dropped to 609,000[2] units out of an industry total of 3,000,000[3] sets - only about 2/3 of its 1931 volume. Philco was still in first place, but it is almost certain that they operated at a loss for 1932.

The trade journals lamented that the pee-wee radio had ruined the industry. Between December 1, 1932 and May 1, 1933, it was estimated that of the 500,000 sets that the industry sold, 300,000 were pee-wees.[4] Most manufacturers were having trouble meeting fixed costs on their plants. As Fortune put it in June, 1933: "The baby radio has grown so fast its own mother hardly recognizes it. And she isn't sure she wants to either." [5]

With the industry in such a state, it is not surprising that Philco in 1932 devised an ingenious system for reducing the patent royalties it paid to RCA. Although the royalty fee had been reduced to five percent of the selling price in 1932, Philco still found this rate excessive. To further reduce the royalty charges, the firm split itself into two companies: the Philadelphia Storage Battery Company, a manufacturing concern, and the Philco Radio and Television Corporation, an engineering and selling company.[6]

In reality, the split was made in name only since both "new firms" were located in the same old building and had the same officers. The Philadelphia Storage Battery Company manufactured the chassis. It then sold the chassis to the sales organization, the Philco Radio and Television Corporation, which added cabinets, knobs, dials and packaging. Routine production engineering was charged to the Storage Battery Company while developmental engineering was charged to the Philco Radio and Television Corporation.[7] Royalty fees were based on the price which the Philadelphia Storage Battery Company charged the Philco Radio and Television Corporation for the receiver chassis! Because of this scheme, RCA tried to cancel Philco's license in 1934 so Philco filed suit.

The word "television" in the name of Philco's sales organization was no idle boast. During the summer of 1931, Philco had retained the services of the talented young television inventor, Philo T. Farnsworth. Farnsworth was one of the pioneers (along with RCA's Zworykin) in developing all electronic television. On June 28, 1932, Philco was granted experimental television license W3XE[8] , for one of the first all-electronic television stations in the country. The war with RCA was escalating.

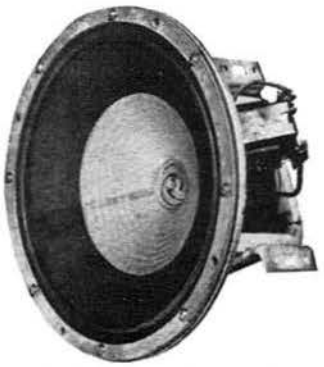
1933 – TURNAROUND

The radio industry price was reached its bottom in early 1933. At that time, even the staid Radio Corporation of America introduced a four-tube cigar-box pee-wee for $12.95. but by mid-1933, sales began to improve as the radio public rediscovered an interest they thought they had outgrown eight years earlier - the thrill of distant reception. But this time, the thrill came not in receiving Los Angeles from the east coast, but in listening to broadcasts from London, Paris or Berlin on short-wave.

Philco and other manufacturers had introduced all-wave (a receiver tuning from the broadcast band to about 20 Mhz) receivers in the mid-1932, but widespread interest in short-wave reception did not catch on until 1933. Of the thirty-nine new models which Philco introduced for the 1933-34 season at the June RMA Trade Show, eight could be classified as all-wave and nearly all other models had a second band with some short-wave capability. Philco also gave in and introduced a cigar-box pee-wee but priced it at $20.00. During the price war, Philco never sold a set below $18.75. At the top of the line was the Model 16, an eleven-tube all-wave receiver housed in several different cabinet styles. With the Model 16, Philco significantly advanced the state of the art in high fidelity receivers. As Philco put it, the 16 was designed to "bring music back to radio." Quickly, the $175.00 16X console became a strong seller, but not for the reason Philco had expected. The public was buying the 16X because of its superior short-wave performance, not because of its fidelity!

This didn't bother Skinner who was pleased that expensive radios were selling again. And, it didn't deter Philco from its campaign for high fidelity. Philco magazine advertisements continued to stress the musical qualities of the 16X and Philco continued to pay $100,000 to $150,000 per year to sponsor fine music broadcasts such as the Philadelphia Orchestra. Skinner's reason for this: "the more the public appreciates good music and good programs, the bigger and better radios they will buy and the more money there is to be made in the radio set business."[9]

Sales results for 1933 showed that the industry was beginning to recover from the dark days of 1932. Philco had begun its recovery more quickly than the industry as a whole, but there was no mistaking the fact that the cheap set was still very much in evidence. Average set price for the industry had fallen to $35.00 in 1933 from its 1929 high of $133.00.[10]



Philco high-fidelity speaker

Sentry Box—slide-rule tuning scale, GE high spots. Rugged, stable arrangement of r-f coils, switches and associated parts. Complete tuning scale visible, other ranges out of sight until needed

1934 – RECOVERY

During 1934, Philco sales rebounded with force earning the firm the largest industry penetration it would ever attain. In 1934, Philco sold 1,250,000[11] sets out of the industry total of 4,084,000[12] for a penetration of 30.6 percent. Nearly one in every three receivers produced in 1934 carried the PHILCO trademark. Additionally, 1934 was the first year when Philco broke the elusive million set mark.... The public had decided that it wanted both good tone and short-wave reception, and $100.00 consoles were now outselling cheaper consoles by two to one.[13] Philco's quality advertising theme of the past three years was paying off as Philco firmly established itself as the "big set" producer of the depression.

Philco annoyed the industry once more in June of 1934 when it introduced a staggering line of forty-nine new models for 1934-35 headed by the High Fidelity Model 200-X. The Model 200-X was the first true high fidelity receiver (by modern standards) to be introduced by any manufacturer.It incorporated such advanced features as an enclosed speaker chamber, high frequency sound diffuser, fifteen watt super Class A output stage and variable selectivity. Its high frequency response was flat out to 7500Hz (previously 4000Hz was considered good) and for the first time, live broadcasts sounded almost real. The industry was upset by this receiver because they had previously met and decided (except for Skinner) to delay production of high-fidelity sets until 1935 or 1936 because of some problem inherent with high-fidelity set design.[14] The chief problem was the fact that as fidelity or bandwidth was increased, selectivity (the ability of a receiver to receive a weak signal sandwiched between two powerful locals) was decreased. All manufacturers realized that some means of varying the bandwidth of the IF amplifier was necessary, but Philco, with the help of Hazeltine Labs, was the first to discover an economical method to accomplish this. Thus, Philco had a one-year jump on the rest of the industry!

To demonstrate the advantages of this new set, Philco hired operatic star, Lucrezia Bori, and centered much of its 1934-35 advertising campaign around this one model. Due to its high price ($200.00), the 200-X was not a big seller, but its halo-effect on the rest of the Philco line was indisputable. People flocked to dealer showrooms to have a look at the 200-X and frequently walked out with a lesser set in the Philco line. Philco was now practicing "selling-up" on the low end and "selling-down" on the high end!

In its February, 1935 issue, Fortune estimated the unit sales of the top radio manufacturers in 1934 and ranked them in order: [15]

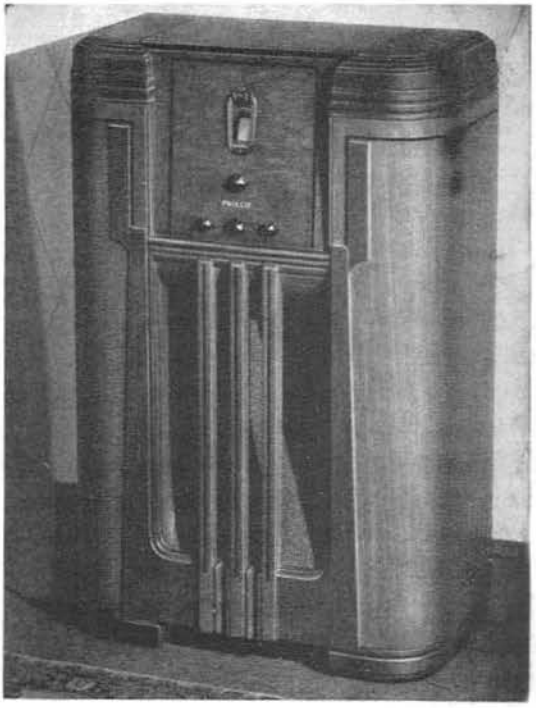
Philco	**1,250,00**
RCA	**500,000**
Crosley	**300,000**
General Household Utilities (mostly auto)	**300,000**
Colonial (Sears Roebuck and Company)	**300,000**
Wells-Gardner (Montgomery Ward)	**200,000**
Emerson (mostly midget)	**200,000**
GE (manufactured by RCA)	**200,000**
Atwater Kent	**100,000**
Zenith	**100,000**
Bosch	**100,000**
Total accounted for units	**3,550,000**

1935 – COMPETITION INCREASES

Nineteen Thirty-Five was a prosperous year for the radio industry. Sales for the year were up 47.5 percent totaling 6,026,800[16] units.... Unit sales broke the previous record set in 1929. Nineteen thirty-five was also significant in that it was the first year in which auto radio sales topped one million units.[17]

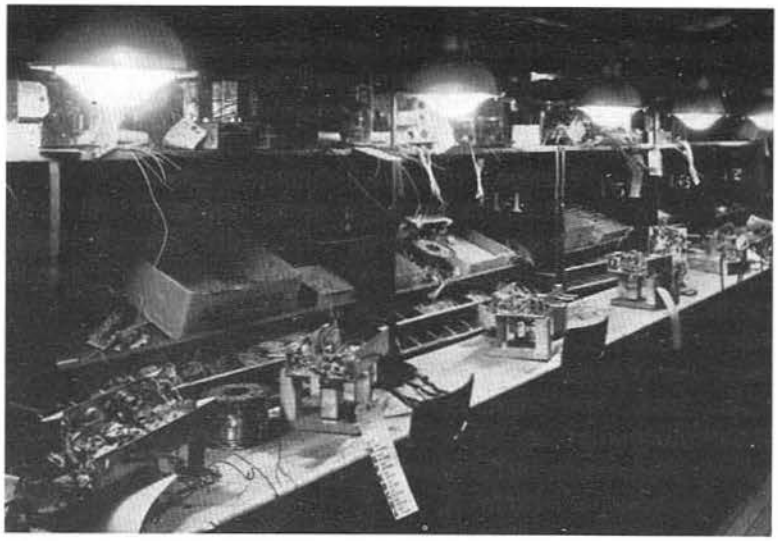
Philco, in 1935, continued its successful strategies of the past few years, Its receiver sales broke the 1934 record amounting to about 1,500,000 (est.) units, but industry penetration had dropped to about twenty-five percent due to increased competition particularly from RCA, Zenith and General Electric (who began making its own sets in 1935).... Philco was also selling about 1/3 of all auto radios sold with an even greater penetration in the OEM market. The year had gone so well that Philco paid its factory workers a Christmas bonus.[18]

At new model introduction time, Philco got itself into a heated argument with the rest of the industry (except for Zenith) concerning the new metal tubes which had been developed by GE and introduced by RCA. During the thirties, Philco's engineers were developing a reputation for shunning meaningless technical changes. In 1931, they had refused to switch to variable-mu tubes until the characteristics of these new tubes had stabilized. In 1932, they bucked an industry trend to a new series of 2.5 volt tubes, introducing instead, their own line of 6.3 volt tubes which were also usable in auto radios (Philco's 6.3 volt line eventually was adopted by the industry). In 1933, Philco resisted the trend to Class B audio output stages which provided higher efficiency at the cost of higher distortion.



NEW 1935 PHILCO 16X

Metal tubes had been developed by GE, merely to give them something to talk about in their all new 1935-36 radio line. Metal tubes provided no real advantages over glass tubes, and they had significant disadvantages in cost and for high-frequency operation. But the radio industry in 1935 was anxious for something new to advertise (real technical innovations were slowing down) so they flocked to the metal tube coining catchy names for their metal tube-equipped receivers such as "Ferrodyne." Philco, however, stuck by the old glass tube claiming superior performance for Philco receivers due to the larger number of glass tube types from which to select. Once again, Philco was correct. Within three years, the metal tube had begun to disappear from new receivers.



1936 – PROFITS DIP

During 1936, Philco again set new records in unit sales and dollar sales, but after tax profits took a serious dip. Philco unit sales reached 1,900,000 and dollar sales rose to $56,675,000[19].... The reason for this drop in earnings is not clear. Could it be that buyers shunned Philco's high-line models because they lacked metal tubes?

On average, 1936 was a good year for the industry. Sales for the year totaled 8, 248, 000[20] sets worth $450,000,000.[21] Both figures were up sharply from 1935. Due to mounting competition, particularly from Zenith, whose "big black dial" sets had caught the public's fancy, Philco's industry penetration dropped to twenty-three percent, down two points from 1935.

1937 – RECESSION

Mounting labor problems and a general business recession caused Philco to register a small loss in 1937.... However, Philco retained its position as industry sales leader for the eighth year in a row, and in December, 1937, produced its ten millionth radio, a Model 38-116XX.

Philco's poor earnings performance in 1937 can be largely attributed to labor problems which began to plague the company in the second half of the year. Philco signed a contract with the United Electrical, Radio, and Machine Workers, C.I.O., in 1933.[22]

Philco was spared from a major strike until 1938, but by late 1937, minor work stoppages were interfering with the 1937-38 model year launch. Philco had spent a good deal of money advertising its new receivers with slanting control panels which it had dubbed "No Squat, No Stoop, No Squint," but it was having trouble maintaining a steady supply to meet the demand. To make matters worse, a business recession began in August, 1937, and continued into 1938.

STRATEGIC ANALYSIS
1928-1937

During the period 1928-1937, Philco was undoubtedly the success story of the industry. From near oblivion in early 1928, Philco went on to capture the number one sales position in the industry by 1930. Furthermore, Philco was to retain its title of radio sales leader in every year of civilian radio production from 1930 until 1961 when the Ford Motor Company acquired Philco. The fact that Philco attained its position of leadership during the worst depression this nation has ever known makes Philco's performance in this era even more remarkable.

(Mr. Wolkonowicz discusses management style, production, product , marketing, and distribution strategies in this section. For this article, product strategy is included.)

Product strategy

Philco's product strategy was centered around offering the buying public the highest possible performance at the lowest possible cost. During 1928 and 1929, Philco had stressed product quality. Once the desired reputation for quality was achieved, however, the next objective was to build volume, thereby lowering unit cost. Because of its ultra-modern production facilities, Philco's overhead was among the lowest in the industry. As volume increased, Philco was able to continually lower prices (thereby setting up a competitive barrier), yet the firm maintained its profits through volume.

By 1931, due to the volume Philco had achieved, the competition found it impossible to match Philco's value for the dollar. At this point, Philco began to emphasize styling and performance and began to downplay quality of construction. While RCA and Atwater Kent receivers were built to last for fifty years, Philco adopted a more "light duty" approach to chassis construction. Philco engineering was second to none, however. And Philco's cabinet styling, often the work of leading industrial designers, paced the industry.
In order to augment its "selling-up" approach to sales, Philco adopted the philosophy that Alfred P. Sloan Jr. had introduced at General Motors - "a model for every purse and purpose." Philco models covered the price spectrum from $20 to $200 or higher. Most importantly, in each price range, Philco offered a level of performance that the competition could not match.

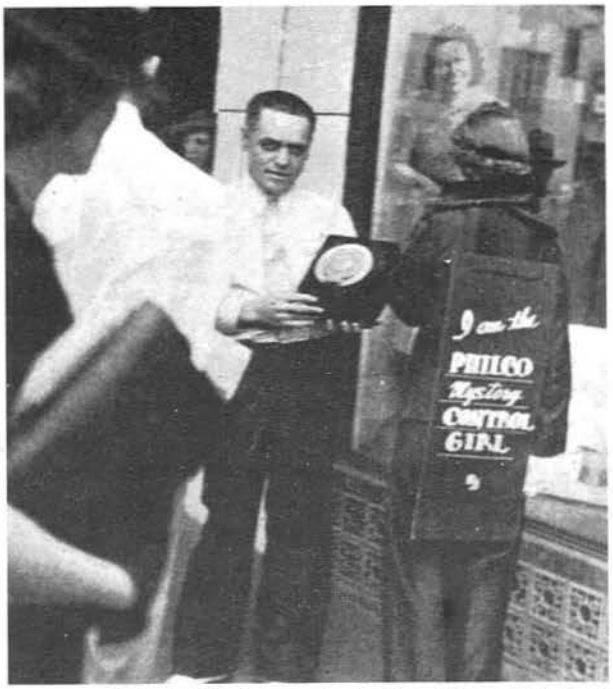
Throughout the 1930s, Philco championed the concept of high fidelity. While other manufacturers emphasized power output and heavy bass response, Philco went after low distortion and wide frequency response. Jim Skinner was certain that if the musical quality of his products was emphasized, sales of the larger, more profitable radios would increase.

Lastly, Philco had a superb talent for introducing products that were right for the times. The introduction of the Philco Baby Grand in 1930 is probably the best example of this talent. While other manufacturers looked down on the midget receiver as simply a cheap radio with low profits, Philco saw it as a sales builder, a set which could perform the dual function of opening up a new lower strata of radio buyers while at the same time serving as the price leading basis of their clever "selling-up" strategy. Philco's goal was to always remain one jump ahead of the competition.

Conclusion

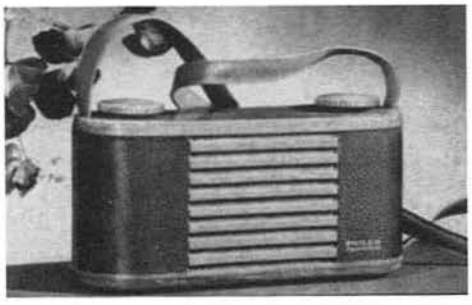
Thus, it is clear that Philco's success in the 1928-1937 period was due to an innovative but integrated strategy. Philco's executive stock ownership plan attracted and kept a high-quality management team and motivated then towards the common goal of profits. This team designed a clever production and control strategy which kept manufacturing coasts low, thus, allowing Philco to offer the public more value for its money. Philco's product strategy and aggressive advertising campaign were tailored to augment the "selling-up" scheme which Philco used to move expensive sets when the competition could only sell midgets. The volume that was achieved, as well as Philco's tight production control program, allowed Philco to attract and keep the best radio dealers in the country. It was a well thought out, careful strategy.

Unfortunately, by the late 1930s, the radio market was changing. Philco's competition was getting smarter and the market was saturating. In the next section, Philco's response to this changing environment will be examined



Philco's Mystery control girl walking backwards with the flick of a finger... Gus Blass Co.

[1] *Fortune, February 1935, p168*
[2] Ibid, p166
[3] *Broadcasting*, 1968 Yearbook pb-250
[4] Fortune, July 1933, p64
[5] Ibid.
[6] MacLaurin, W. Rupert, *Inventions & Innovations in the Radio Industry*, 1949, pp137-138
[7] Ibid.
[8] *Philco Ford News*, 1967, p3
[9] Fortune, february 1935, p170
[10] Ibid., p173
[11] Ibid., p166
[12] *Broadcasting*, 1968 Yearbook pb-250
[13] *Fortune, February 1935, p170*
[14] Ibid., p1173
[15] Ibid.
[16] *Broadcasting*, 1968 Yearbook pb-250
[17] Ibid.
[18] *New York Times*, December 28, 1935
[19] MacLaurin, p142
[20] *Broadcasting*, 1968 Yearbook pb-250
[21] Ibid.
[22] *Fortune*, November 1944, p1118



Philco Model 16 Radios

By: Herb Brams

Philco's model 16 radios, made from 1933 to 1935, were among Philco's best sets. The chassis was a deluxe eleven-tube model with many features for high performance. In addition to the AM broadcast band, the chassis could receive up to 23 Mc in three shortwave bands. The chassis had an RF stage and two IF stages for high sensitivity and selectivity. The tuning knob was a dual-drive concentric type, the outer part of the knob giving fast tuning across the dial, and the inner part, geared down, provided slow tuning to help separate closely spaced stations. To indicate when the set was tuned exactly to a station, there was a shadowmeter, a backlit meter that cast a shadow onto a screen above the tuning dial. The shadow became narrower as the station was tuned in.

The sound quality of the set was excellent also. The output stage was a high fidelity type using push-pull triode-connected type 42 tubes capable of delivering eight watts of power with low distortion. The speaker was generally large; at least eight inches even in the table sets. A complex tone control gave four different degrees of sound quality. Early versions of the Philco 16 had a side-mounted on-off switch for muting interstation noise. In later versions, this was eliminated and the switch provided additional bass response.

The model 16 chassis was used in a variety of cabinets: cathedral-shaped and tombstone table models , several console models , and even chairside versions that featured a remote speaker connected to the receiver by a long cable. The various models, although expensive, must have been quite popular as they are not difficult to find today.

Restoring a Philco 16 chassis is a fairly difficult job. The circuitry is complex and many parts are in locations far removed from associated components making it difficult to trace the circuit. In addition, Philco incased their capacitors in Bakelite blocks with terminals on top to which other components were mounted. Replacing these capacitors and remounting the parts is a messy, complicated operation. To deal with this situation, I install terminal strips in place of the blocks and mount the parts on these. By using terminal strips with many tie points, one can mount associated components together, saving space and putting parts in a more logical order which facilitates circuit tracing.

This procedure may also reduce hum and improve the stability and performance of the set. To mount the terminal strips, I cut the standoff part of the original blocks with a hacksaw and use this part as a spacer with the original screw to mount the terminal strip. With the strip raised up in this manner, there is plenty of space to mount components.

Another problem in restoring the Philco 16 chassis is that there are a few unusual capacitors in the sent, namely several one and two mfd. capacitors used as filter capacitors. Replacements for these capacitors may be difficult to find. I use 400-volt Mylar capacitors for long life. Otherwise, one can use 10 mfd. 450-volt electrolytics. For the 1.0 or .5 mfd. capacitors in the first audio stage, use 400-volt Mylar capacitors. Do not use electrolytics here as these have too much leakage, causing noise and distortion in this stage.

Another potential problem is the Philco 16 chassis is the dial cord. In this chassis, the tuning knob drive shaft turns the tuning condenser and dial by means of a thick dial cord. The drive shaft is small in diameter and so has little grip on the cord. Worse still, the dial cord is would only a half turn around the shaft, giving even less grip. If any friction develops in the tuning condenser, the cord simply slips on the drive shaft and the tuning condenser will not turn in their sets.

For slipping dial cords, a variety of remedies can be tried. First, lubricate all bearing and check to see that the tuning condenser itself can be turned easily by hand . To increase the grip of the cord, one can apply an alcoholic solution of rosin to the cord. This may not be a permanent solution, however, as the rosin eventually dries out. A better method is to increase the tension on the dial cord by stretching the spring that keeps the cord taut or by using a stronger spring. If the two ends of the cord come close together, on can tighten the cord by taking both ends of the cord off their mountings, twisting them around each other several times, and reattaching the end. One can also simply tie a knot in the cord to shorten it, but there is the possibility that this will make the cord too short. If the cord makes only a half turn around the drive pulley, one can twist this loop so that the cord now crosses itself and makes nearly a full turn around the pulley. This method will not work if the cord now rubs against anything.

The problem with all these remedies is that the increased tension of the cord may also increase mechanical friction so that the tuning shaft still slips. In that case, it may be necessary to try a new cord. A thicker dial cord may be used to increase grip, but the cord may bunch up on itself as the shaft turns. Alternately, a thinner cord may be used, wrapping it an extra turn around the drive shaft to increase grip. This method finally solved the problem in one particularly stubborn case. If the tuning condenser itself turns stiffly, one can loosen it by backing off the set screw at the rear end of the shaft, but this may affect the alignment of the set.

Once these problems are taken care of, further restoration of the chassis is routine. Measure the resistance of transformer, coil, and choke windings to see that there are no open elements. Check resistors to see if they have gone off value. Test the tubes to see if they are all right. Turn the set on and measure voltages a various points in the circuit to see if they are the right values. If the set seems all right and is playing normally, it may now be realigned.

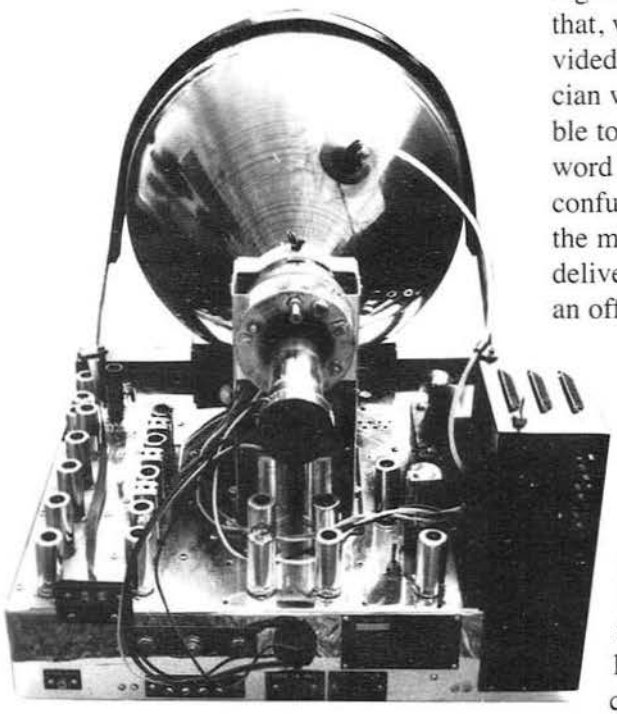
After restoration, Philco 16 radios prove to be real champions. They pull in many stations easily with only a few feet of antenna wire. The dial calibration is excellent: one can tune to a particular dial marking and be exactly on the frequency indicated. The sets have an excellent tone with plenty of power and good bass without any boominess. The only weak point of the set is the shadow meter. The shadow meter was not one of Philco's best ideas. The shadow does become narrower as stations are tuned in but the action is jerky and imprecise because friction causes sticking in the meter movement. This does not degrade the performance of the set, however. The glowing "Magic Eye" tube, developed a few years later, was a much better tuning indicator. Strangely, Philco never used this tube in their sets.

I hope that many more Philco 16 radios turn up and can be brought back to the excellent performance they are capable of. These sets show us the state of the art in radio seventy years ago, a level of performance that is hard to beat even today.

Philco Atlas c.1934 courtesy of S Sutley

Kit TVs - Do It Yourself Fun

By Eric Stumpf



Within the Realm of television collecting, one often-overlooked genre is that of the humble home-assembled TV. From the very dawn of television, to-it-yourselfers had the option of purchasing the necessary components of a kit that, when ultimately assembled, provided the resourceful hobbyist/technician with a finished product comparable to a factory produced unit. The key word here is "comparable", not to be confused with "equal". The sad fact of the matter was that kit TV's seldom delivered the quality or performance of an off-the-shelf RCA, DuMont, etc.

This did not deter the curious or brave-at-heart tinkerer who would tackle the construction of a actual television receiver from what was no more than a box of filters, capacitors and vacuum tubes. The incentive was surely motivated by an element of challenge as well as economy. The cost of purchasing a TV kit was less than that of a store-bought receiver, but not significantly so. Despite this, thousands of homemade TV's found their way onto workbenches and eventually (but not always) into the living room.

1939 Meissner kit offered style and substance

In the late 1920's and early 1930's, mechanical scanning disk technology combined the electronic basics of radio and the optical phenomenon known as persistence of vision. Television transmission and reception were possible as a result albeit through primitive means. Those who had experienced the satisfaction of building a crystal set or a rudimentary vacuum tube radio might have considered the construction of a scanning dick TV kit; the next logical progression of the ever-developing technology. Construction kits with all the essential parts were offered by various manufacturers of radio components. Complete kits were shunned by the more tenacious radio buffs who would source-out the necessary hardware from old radios, junk boxes and parts jobbers. These brilliant home-brew creations can be sometimes be found today, preserved by the pride that went into their creation, possibly. Sadly, the value of such units is considerably less than that of a receiver made entirely from a commercially produced kit.

The television art had progressed significantly by the late 1920's; now employing entirely electronic concepts, scanning disks were an anachronism. Picture tubes ruled the roost and sensitive iconoscopes scanned the images that appeared on them. In Late 1938, DuMont initiated sales of the first home television receivers that did not rely on mechanical picture generation. With RCA, Westinghouse, GE and a host of others on its heels, TV was here to stay; or so it seemed. Television kits again appeared and were substantial offerings considering the stratospheric cost of commercially produced sets. These represent the most collectible of the kits, whether assembled or not.

What seemed to be a sure thing in 1939 was assigned to a state of limbo during WWII. Such a sleeping giant was certain to awake and in 1946 it threw back the covers and re-emerged, bigger, better, and still, more expensive.

The initial post-war TV kits were prolifically produced from 1946 into the 1950's and held the same promise their pre-war predecessors did: economy and do-it-yourself satisfaction.

The ever-decreasing purchase price of TV receivers throughout this period eventually made home-built units obsolete from a cost-effective standpoint.

A three-year-old premium radio/phono/TV combination could be purchased for the price of a 12" Transvision kit in 1950. A brand-new 10" Admiral cost about 10% more. During the 1960's and 1970's, sales of kit TV's plummeted though a few manufacturers like Heathkit continued to offer them in conjunction with other, more profitable, catalog wares. At this point, TV kits were viewed as instructional projects designed to teach and delight more than to save a buck.

As a TV collector, I have affection for these home-assembled electronic relics. I admire the people who took on these complex projects with the intent of producing a operational TV set. Imagine their pride when they frost carried that 1949 TeleKit up from the basement and turned it on before an anxiously awaiting family of future TV junkies.

Kit or factory-built? TV choices of 1929

In order to describe what TV kits were offered to the public over the years, it's necessary to group them into three period categories: Mechanical Era, Pre-War and Post-War.

Mechanical Era TV Kits

These used either the Nipkow scanning disk with differing numbers of holes (the more holes, the better the image resolution), or they employed a variant of the scanning disk principle: the scanning drum. Two basic units were needed for home television viewing in this period, which roughly spanned 1927 to 1933. First, the motorized scanning disk unit and second, a short-wave radio receiver. Companies that offered kits of this sort were See-All (Fig. 1), Freed-Eisemann, Jenkins, Daven, Poll, Insuline and Shorewave and Television Corporation, among others. Individual components needed in the construction on mechanical TV receivers were available from many of the electronic parts manufacturers and were advertised within the pages of contemporary radio enthusiast magazines. A great interest in the subject of television was generated by these publications as they regularly featured articles about the technology itself and/or TV receiver construction requirements. Most scanning disk TV Units that have survived, and are in the hands of preservationists and collectors, are of the Kit variety. Commercially assembled units are extremely scarce and even more so when within a stylish factory cabinet.

Transvision's 1949 lineup

Pre-War Era TV Kits

During the 1030's, a great shift in television design resulted from rapid strides made in concept and development. With a great investment of corporate resources, the major radio manufacturers RCA, Westinghouse, Philco, General Electric, etc. Pushed the television art into the nest stratum.. Smaller enterprises, such as the DuMont and Farnsworth concerns, contributed as much, if not more, to this ever-growing science, With millions of dollars behind it, the superior, completely-electronic TV of the late 1930's, was ready to make the jump from lab to living room.

Though officially unveiled by RCA at the 1039/1940 New York World's Fair, electronic television receivers employing cathode ray picture tubes had already been publicly demonstrated by other manufacturers and developmental groups. Home units were offered for general sale from late 1938 (DuMont) and throughout the immediate pre-war years. The cost of these well-built, beautifully styled receivers was high. Again, a kit-type equivalent was in demand and thus offered to the technically handy populace. Andrea Radio and Meisner (Fig. 2) sold the most commonly found TV kits from this time frame. Both kits were fairly involved compared to a typical scanning disk TV kit. They used the 5" cathode ray tube and were available with or without a factory-built cabinet.

Pioneer TV manufacturer Frank A.D. Andrea shows 1939 Andrea radio kit to his daughter in 1950

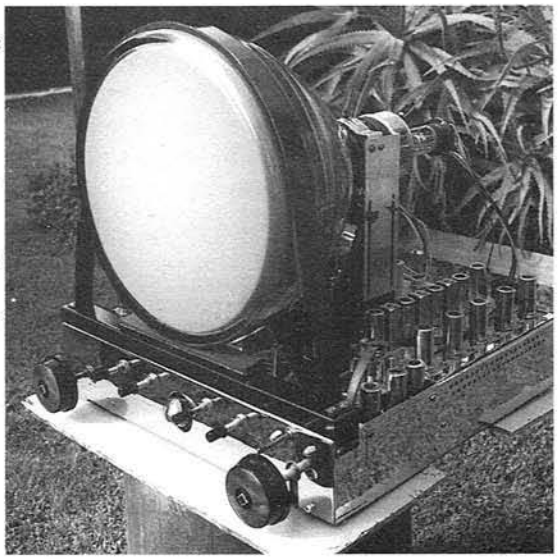
Post-War Era TV Kits

With the end of WWII, 1946 represented the beginning of a TV buying craze that spanned tow decades. As was typical of our post-war economy, great amounts of money were lavished upon luxuries such as new automobiles and consumer electronics. The TV set was as coveted during this period as any available consumer item of the time. Bid industry was obviously willing to invest heavily in TV broadcasting and manufacturing. The; American public could have faith in television's presence now. In fact, nothing could hold it back.

A 1948 Transvision kit nearing completion

People bought TV sets confidently and as quickly as the factories could churn them out. The five years after the end of WWII can be considered something of a Golden Age for the TV kit. A sizable selection was offered to the build-it-yourself technician. From simplified 5 and 7 inch tube chassis-only kits to elaborate 10, 12 and 16 inchers that came with swanky cabinets, the choice of kits was inspiring.

The kit manufacturers marketed their wares through catalogs and from within the pages of radio/TV magazines (Fig. 3). The kits made by Transvision (Fig. 4), Telekit and Philmore were the most popular and have a fairly high survival rate. Collectors have a strong appreciation for these units, as their cabinets are unconventionally stylish. This was not always the case with the kits sold by Dynamic, Certified, Republic, Espey, Tech-Master, Cal-Rad, Television Assembly Company, Airex, Cordover, Mattison, Highbridge and many others.



1951 Radio Craftsman RC-200

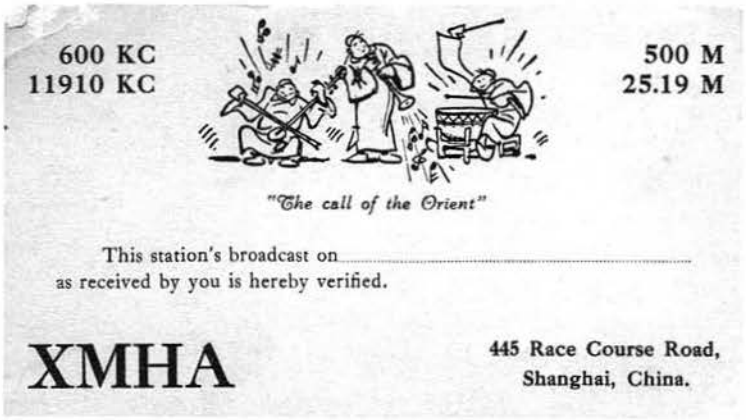
The king of the post-war TV kits really was not a kit in the conventional sense as its basic chassis came partially assembled. With a choice of picture tube types and sizes available, a custom set suiting the builder's personal criteria could be put together. I refer, of course, to the chrome-plated masterpieces sold by Radio Craftsman.

These attractive, well-designed units were intended for in-the-wall installations, but were so pretty, many of them never found a wall or cabinet to hide behind (Fig 5). On the opposite end of the scale were kit TV's provided by the electronic training institutes. Kits of this sort served as bench top classrooms for aspiring service technicians. The mail-order instructional courses could send kits of their own design to students who would then learn the basics of television during assembly. The finished product's owners occasionally celebrated this accomplishment by building their own cabinets; I've see a few of these and they were corny beyond description (I wish I had a few).

During the latter half of the 1950's, the cost of buying new TV sets had dropped so drastically that nearly all the kit TV manufacturers went bankrupt. Except for the educational challenge, little incentive existed for building a TV from scratch anymore. In the end, Heathkit managed to offer a product well into the 1970"s; they sold poorly, I saw one of these recently on the curb in a Los Angeles suburb awaiting the trash truck and the final, Inevitable trip to the landfill. As the pouring rain curled the edges of its ugly Masonite cabinet, I thought it sad that something once so representative of resourcefulness, pride and skill was now considered worthless.

Our Man in Shanghai

by Bart Lee KV6LEE, xWPE2DLT
correspondence is invited



The late **Alex Cattell** enjoyed his membership in the California Historical Radio Society in his retirement. His career in radio encompassed positions such as Chief Engineer at San Francisco's KRON. It had commenced in China in the 1930s and as Chief Engineer of Shanghai's radio station XMHA, a Blue Network (NBC) overseas affiliate. The Shanghai Dollar Directory for January, 1941 lists him along with the six other staff members, and notes its motto: "***The Call of the Orient***." It operated on 600 khz. It was one of several stations in Shanghai's International Settlement. A nearby photo shows the station personnel (Alex is fourth from the right) when it was an Armed Forces Radio Network station (circa 1945-'46). A reproduction of its QSL card is nearby (both come from his estate). XMHA operated on short wave at 11.860 and 11.910 mc. XMHA' programming is noted in Jerry Berg's new short wave radio history ***ON THE SHORT WAVES, 1923-1945*** as entertaining and dramatic in raking the Axis powers over the coals three times a day.[1]

Alex Cattell was 18 in 1936 and as a Russian refugee was working his way through school at Harbin's Polytechnical University.in China. He built radio receivers for ship to shore work. He joined XMHA in 1938 and built its five-kilowatt shortwave transmitter. Upon the Japanese invasion, he escaped to the Phillipines, then to Australia. He returned to XMHA after the war but came to America in 1946 when the Chinese government took the station over. In San Francisco, he was active in the Russian Church, and a yachtsman and photographer, as well as a radioman. He played a significant role in the Sutro Tower antenna tower design and construction. He died in 1992.

Shanghai, China was the proverbial hotbed of international intrigue before, during and after World War II. Alex Cattell had been in the middle of it. A new book by Bernard Wasserstein, *Secret War in Shanghai*[2] tells this amazing story in great and sometimes gory detail. An important aspect of Shanghai's pathology was its radio industry, full of propagandists for every cause and nation, a good many of them outright traitors and spies. The British, before the war, owned XMHA and XCDN; the French station had French-sounding call letters FFZ; the Japanese ran XQHA; the Russian station was XRVN, and the Italians operated XIRS. Inasmuch as the German station got the call letters XGRS, one wonders if the call signs were abbreviations, e.g., "Italian Radio Station" and German Radio Station." At this remove, there is no clue why or how call signs were assigned. Perhaps, station operators simply chose their own call signs. In any event, there were fully 40 Shanghai radio stations, broadcasting often at high power, and in many languages.[3] The British after 1941 financed a Soviet radio station in Shanghai broadcasting propaganda inimical to the German war effort, even after the Japanese occupation.[4]

The German propaganda radio station, XGRS, was the most powerful in the Far East.[5] Upon the German surrender in 1945, the Japanese took it over along with a companion station, XGOO, for more broadcasting of propaganda by turncoats and traitors.[6] The Japanese Navy took over XHMA during the war.[7] The British, Japanese and Chinese all listened to each other's wireless traffic.[8] The American Navy had a listening post in the Shanghai consulate as early as 1928, manned by Marines and commanded by then Captain Zacharias (other sources report).

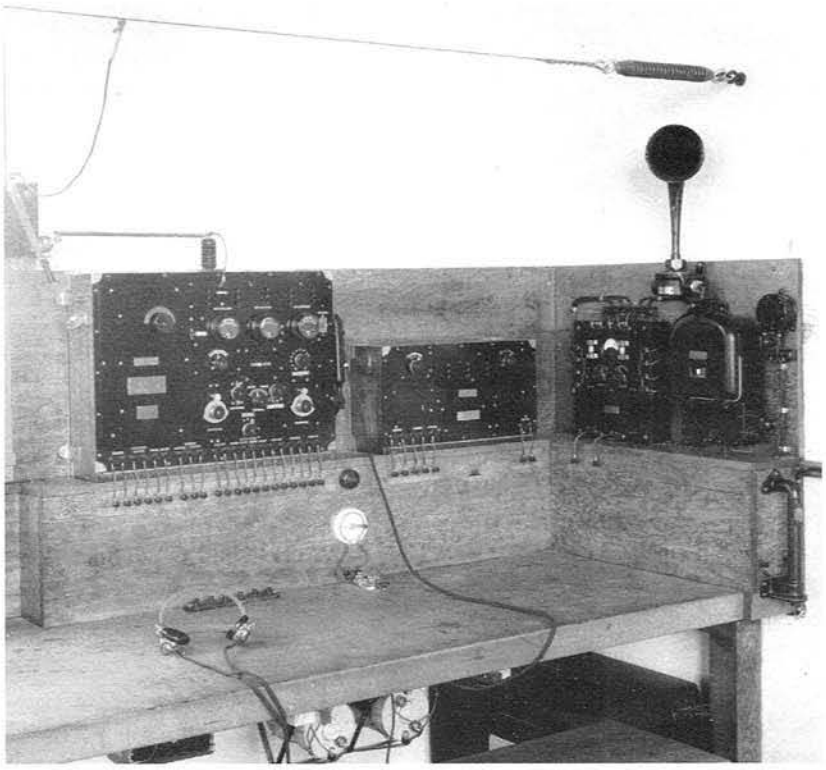
During the war, German intercept stations copied and decrypted enormous amounts of American military traffic, sometimes as much as 2,000 messages a day. Many were sent in the clear, posing no challenge at all beyond tuning the dials.[9] The Nazi Abwehr spies were very happy campers. The Nazis in the Far East even intercepted the wireless traffic of their ally, Japan.[10] At least one wireless spy, James H. Smart, worked for the British as the head of their monitoring and intercept operations in Shanghai. After the occupation, but with British connivance, he set up the same system for the conquering Japanese.[11] He then left his 17-year-old Russian stepson in charge, as a British agent, who later went to work for the Japanese in the Phillipines.[12]

The real hero of the whole war in Shanghai was the British radio operator Petty Officer Cuming, on the captured gunboat H.M.S. Peterel. Cuming managed to escape the capture and stay at large in occupied Shanghai. He then, on his own initiative, set up a secret communications spy and sabotage network in occupied China for the duration of the war.[13] By 1943, the British had at least one other clandestine radio network of some 20 stations operating in the service of espionage and sabotage.[14]

The wretched truth was, however, that any self-respecting spy in Shanghai had to be up before dawn to listen to his short wave set for news from Moscow, Honolulu, San Francisco, and London before heading off for the usual day of conspiracy, betrayal, and often murder.[15] The ether rang with the sounds of war in Shanghai from the Japanese invasions of 1937 to the end of the Chinese Revolution in 1949. The Communists cleaned out the old Shanghai with the success of the People's Revolution.

---

[1] Berg, Jerry. *On the Short Waves, 1923-1945.* (McFarlane, 1999, p91)
[2] New York, Houghton, Mifflin, 1999
[3] Ibid., p66
[4] p109
[5] p67
[6] p261
[7] p175
[7] p29
[9] p227
[10] p53
[11] p161
[12] p252
[13] p195
[14] p212
[15] p113



Mare Island radio laboratory c.1921
photo courtesy of Perham Electronics Museum

CHRS received the same Western Electric brass loudspeaker from the late Dick Dillberg estate. Could it be the same one? If only we had the whole setup...

RADIO INTELLIGENCE WAR WORK IN SAN FRANCISCO:

THE TWO-THREE-FOUR IN THE PRESIDIO AND AT MACKAY'S STATION KFS AT HALF MOON BAY

By Bart Lee

The Japanese attack in the Pacific on December 7, 1941 was indeed all too much of a surprise. In the six months that followed, the Japanese overran American, British and Dutch cities and bases around the Pacific's Western shores. The British lost Singapore in late December 1941. In the Philippines, first the Bataan Peninsula, and then the fortress of Corregidor fell by May 1942. The Dutch lost Bandoeing and the rest of Indonesia, with all its oil, early on.

By the end of 1942, the Japanese ruled from Manchuria to Australia, and from India's border with Burma to the Western Aleutians in Alaska, Wake Island in the mid-North Pacific, and the Solomon Islands in the South Pacific. MacArthur escaped from the Philippines to Australia on a submarine. The last, heartbreaking message from the last Army radio operator on Corregidor, as the fortress surrendered, was copied helplessly by several stations.

Most of the information that follows comes from Prof. Richard D. Kain's 1998 oral history done by the National Park Service at the Presidio, where he had served as a Sargent and intercept station "trick chief" between 1942 and 1946. [48] In this chaotic period of retreat and defeats, in December, 1941 and early 1942, the ether delivered a few strange short wave signals to state-side monitoring stations. They seemed to be Americans seeking contact with American Forces and transmitting Morse code in plain language. They could be heard in California. Perhaps they were some Japanese trick, the kind of "radio-game" of which the Nazis were so fond. On the other hand, maybe they really were Americans in desperate straits.

The Army quickly established contact. Once communications links were working, the operators could determine that they were indeed talking to Americans. Only Americans could know cultural details, family matters and the minutia of overseas postings. These circuits, however, posed an unusual problem: the overseas radio operators had no codebooks, so only plain language messages had to suffice.

The Army early on decided to create a "cover" for these communications. All Army operators adopted amateur radio processes, procedures, call signs, nomenclature, and abbreviations (such as the Q signals, e.g., QRN for noise on the circuit, QRM for interference, QSO for contact or conversation, etc.). The Army thus sought to create the impression that some "hams," willing to violate the shut-down orders of December, 1941, still talked to each other on the short wave bands in C.W. Morse code. Fifty years later, Prof. Kain could still remember working a Navy man, Roy Tweed, on Guam after it came under Japanese control. He recalled Hammerlund receivers (one shows in a photo in the unit's History) as well as Mackay equipment, and that of the Hallicrafters and National Companies. These pseudo-ham QSOs used nothing but the best amateur radio equipment.

The Signal Corps created at least one dedicated Radio Company to communicate in this manner. The Presidio of San Francisco housed it. The Signal Corps called it the 234th Signal Operation Company. Its last commander was Captain William B. Inglis of Norman, Oklahoma. The 234th documented itself, consistent with wartime security constraints. It produced a company book, and recorded some of its stories. Some photos have also been preserved On September 21, 1945, the Army awarded the 234th its Meritorious Service Unit Plaque.

It may be that 233 prior companies did not precede the 234th. "Two Three Four" sounds like an arbitrary but hardly random numerical sequence. Perhaps similarly, the covert and irregular Office of Strategic Services (O.S.S.) called its only operational combat regiment in the China-Burma-India theatre of operations the 101st Detachment, lest it ever be known it was only the first such unit.

In 1942, the Office of Strategic Services (O.S.S.) set up two intercept stations in the United States because it did not receive enough intelligence information from the Army and Navy. A front company, FBQ Corporation, established the listening posts in Reseda (Tarzana), California and in Bellmore, Long Island, New York, for foreign broadcasts; the Army soon took them over. The Army used both sites in 1944 to monitor Army transmissions for security breaches.

These Army security stations monitored the work of Army radio operators, such as those of the 234th. In the case of the 234th, however, the monitors did not want to hear good, secure, standard Army communications. The whole point had been to disguise the overseas contacts as amateur radio bootleg QSOs. Hence the monitors listened for any deviation from amateur radio procedures and even vocabulary. The last thing they wanted to hear on these circuits was Army talk. In one instance, the Army disciplined an operator (Sgt. Kain, he admitted) for saying in his QSO with an overseas operator that he had "just gotten out of the sack." Use of an Army term like "sack" for bed could give the game away.

It was hoped that enough boring ham talk, and only ham talk, would send Japanese intercept operators elsewhere for more interesting traffic.

The 234th Signal Company operated from its own radio station on the Presidio. A site inspection of the known radio buildings as of 1998 suggested to Prof. Kain that the station was the former Crissy Field aeronautical radio station. This building, with its own small generator out-building located next to it, has long been converted into a nice house. It is at the West edge of the Crissy Field homes of "officer's row" which housed the pilots and their families. In the 1920s and into the 1930s, it housed the radio transmitters and receivers used by the Army Air Corps to communicate with the biplanes and pursuit aircraft using Crissy Field on the North shore of the Presidio. The 234th's History discloses that the unit operated at Crissy Field until October 7, 1944.

The World War Two radio operators of the 234th in the Presidio referred among themselves to their radio station as "the H.O.I.P." for "House of Intelligent Persons." This station, however, did not provide the only base of radio operations for the 234th. Forty miles South, International Telephone and Telegraph's Mackay Radio Company operated a radio receiving site near Half Moon Bay for its commercial and marine station KFS. The resurrected Globe Wireless Company operates this receiving site to this day for its KFS and KPH transmitters in Palo Alto utilizing marine digital communications with ships at sea. The callsign KFS dates from the Federal Telephone and Telegraph Beach Station on Ocean Beach in San Francisco (callsign FS) dating from its 1910 arc operations).

On December 7, 1941 the radiomen at KFS heard, on 500 KC's, the signal for submarine spotted (SSSS SSSS SSSS) then an S O S, then silence. Globe Wireless operators at KTK, at nearby Mussel Rock in Pacifica, also took the traffic. The ether thus carried some of the first signals of America's Pacific war.

Mackay Radio (and now the resurrected Globe Wireless) had (and has) a wonderful network of antennas, rhombics and the like, for working the Pacific. The war shut off most of the KFS commercial and marine traffic. The Coast Guard took the station over, and the radiomen became Coast Guardsmen. In short order, however, the Army put some or all of the antennas to good use and the receiving station was back in business.

In August of 1942, a KFS intercept started the communications between overseas operators and the West Coast. American guerillas using the old Manila army station callsign KAA called WAR, the U.S. Army's main station in Washington. They came up in the 8 Mc's marine band, sure to be monitored. The Navy and KFS completed a circuit and verified the identity of the guerillas. The circuit stayed open until the Japanese captured the group, killing some and imprisoning the remainder of them.

Another station soon came up, using WPI. It, too, was vetted, and then that circuit carried considerable traffic about Japanese positions in the Islands, all in plain language. Soon a new circuit opened with a more organized group that enjoyed the benefit of an M-94 cipher machine. At this point the Army put in its shifts of operators at KFS.

Details of operators from the 234th at the Presidio went down to KFS for months at a time. They had no leaves or time off. The work was intense and demanding as the war progressed. More and more stations appeared in the Pacific. Soldiers and sailors left behind, especially in the Philippines, came up on jury-rigged transmitters which they had reconstructed. Philippine partisans also put radio equipment into operation. Escaped prisoners of war did the same. Civilians in the war zone came on the air, sometimes from transmitters in ships. In the South Pacific, the "coast watchers" provided intelligence about Japanese naval movements by radio. Toward the end of the war, submarines landed commandos in the Philippines who carried good, working radios and operated on pre-planned circuits with the 234th.

On December 26, 1944, notes the History of the 234th, it received a "Commendation at the conclusion of special mission at Radio Station KFS at Half Moon Bay, California. It was the relay of radio traffic in a certain net designated by the Commanding General South West Pacific Area." Radio operators at KFS also specialized in reception of weak distress signals from survivors of torpedoed ships, which were transmitted on the universal distress frequency of 500 KC's. KFS had a particularly good custom made marine receiver available, saving many lives.

The 234th also got an early taste of the Cold War. Still active at the end of World War Two, the Army called upon it to set up the first Teletype circuit with Moscow. The United Nations (and president Truman) came to San Francisco in June, 1945 for its formal post-war revival, The "United Nations Conference of International Organization" (the Allies had also used the term "United Nations" for themselves battling the Axis powers). The 234th thus played a role in the UN's genesis.

There may well have been other units with equally dramatic stories. Wartime secrecy has, unfortunately, outlasted almost all the participants. With the ongoing declassification of World War Two documents, perhaps more of these stories will become known.

The "adventures in the ether" of the 234th emphasizes that radio intelligence work knew no "front line." Getting too close to a real front line cost the lives of all too many radio intercept operators on all sides. Much of the work could be, and in many cases had to be, done thousands of miles from combat. To do it right, it often had to be done far from the dangers and distractions of the ongoing warring armies. The dedication of these intercept operators was no less intense despite their relative safety.

Diversity receiving station. Each of 3 receivers is fed by a rhombic antenna — each pointing in a different direction.

Sources:

Kain, Prof. Richard D., in the author's National Park Service Presidio oral history interview, notes and tape, and subsequent documentation from Prof. Kain, originals on file at the Presidio with the Curator of Military History

Olson, Hank, and Bill Orr, "The KFS-Federal-Mackay Story"..., 8 Antique Wireless Association Review (1993), pps. 75, 97

U.S. War Department, U.S. Army Signal Corps, *HISTORY OF THE 234 TH SIGNAL OPERATION COMPANY* (San Francisco, n.d. circa 1946) (This courtesy of Prof. Kain)

Radio News, Signal Corps Issue, Nov. 1944 (photo of bank of receivers)

TWO BROTHERS IN TWO THEATERS OF THE WW II RADIO WAR

By: Bart Lee

Dick Secondari (CHRS) and the late Elliot Secondari, brothers from San Francisco, served in the U.S. Army Signal Corps in World War Two. Dick Secondari has provided most of the following information. He was drafted in 1943 as a 19-year-old, as was his brother Elliot. Both had been amateur radio operators and knew the Morse Code. The Army sent them to the Signal Corps after Basic Training. They both qualified as Radio Intelligence Intercept Operators. Dick Secondari (K6TR) has provided the information that follows.

Dick Secondari served with the Second Signal Service Battalion (established by Gen. Maubourne in 1939) whose personnel operated all over the world. The Signal Corps assigned him as an intercept operator to stations working Japanese traffic and he was an "IO-J." The IO-Js had to learn Japanese Kana Code, with 58 different characters and two phonetic signs. They transcribed this onto typewriter-like machines, known as RIP-5s.

The Signal Corps initially posted Dick Secondari to Two-Rock Ranch, northwest of Petaluma, California and he made occasional visits to the Presidio. Later he served in Hawaii, and had been posted to Guam as the war ended. The intercept stations moved west as the Japanese retreated. The traffic consisted of operational messages and procedural messages for radio circuit operation. The Japanese used 50 word per minute Kleinschmidt perforated tape keying systems. The intercept operators recorded the traffic on inked paper tape recorders, the BC-1016, then typed the encrypted messages out as Kana Code. Dick Secondari, still an active amateur radio operator (as K6TR), still has a paper tape recorder, and some documents and messages preserved from his IO-J days. The Waters Conley company of Rochester, Minnesota, made the tape recorder (Army BC-1016 and Navy SC-10 equipment), and illustrations of it from its manual appear nearby.

While on duty, Dick Secondari compiled a personal dictionary of Japanese radio and other terms. He used it to decipher some of the procedural circuit transmissions. For example, he could use his little-black-book dictionary to help figure out a message to change frequency. Then the IO-Js would tune the intercept receivers so they were ready and waiting for the traffic on the new frequency. The IO-Js were thus up on the new Japanese frequency before the Japanese were. Some pages from his circa 1944 dictionary appear nearby. He also retained some of the "end of the War" messages which he had access to and they are reproduced nearby.

The Japanese transmitted diplomatic as well as military messages via short wave radio. The intercept operators called the diplomatic traffic "Dip." As the Japanese conquered new territories, e.g., the Dutch East Indies (Indonesia), they incorporated surrendered radio stations into their network. They did not, however, change the call signs. They also used their own standard pre-war call signs. This made circuit analysis and traffic analysis easy. The station at Bandoeng, for example, retained its pre-war call letters, PLK1, as the Japanese continued to operate it after wresting it from the Dutch.

Dick Secondari's recollection is that the Army favored Hammerlund receivers. The Army intercept stations racked three Hammerlund Superpros as a diversity receiver with a metered combiner circuit (behind a black wrinkle-painted panel) at the bottom of the stack. Dick Secondari recalled that the Army published a photo of such a diversity set-up in a wartime radio magazine (without disclosing its intercept function). He still has a copy of that picture from the magazine. The three meters to the left each correspond to one of the BC-779A receivers, the left meter shows the final combined output. The two bottom meters monitor the power supply. Each receiver worked off a different rhombic antenna, pointing in a slightly different direction in order to eliminate fading and atmospheric distortions. The output from the combiner went directly to paper tape, not earphones. The operators read the tape visually. Operators used earphones for tuning, but almost never a loudspeaker such as the one shown on top of the rack. The nearby frequency meter (BC-221) provided accurate tuning of the system to the nearest kilocycle. As the operators read the tape from the Waters Conley machine, they typed out the Japanese Kana code characters. Others then re-encrypted these messages and used the land line teletypewriter circuits to send the messages to Washington for decryption of the Japanese text. The operator in the photo holds the same rank as Dick Secondari did at the time; he mustered out in 1946 as a "Spec. 5."

The East Coast stations to which Elliot Secondari was assigned monitored Germany primarily. Army intelligence on the East Coast also targeted Argentina, because of the heavy German influence there at the time. Elliot Secondari was assigned to stations working German traffic, and he was an "IO-G." He also served with the 3258th Signal Service Company in Europe with the U.S. 9th Army.

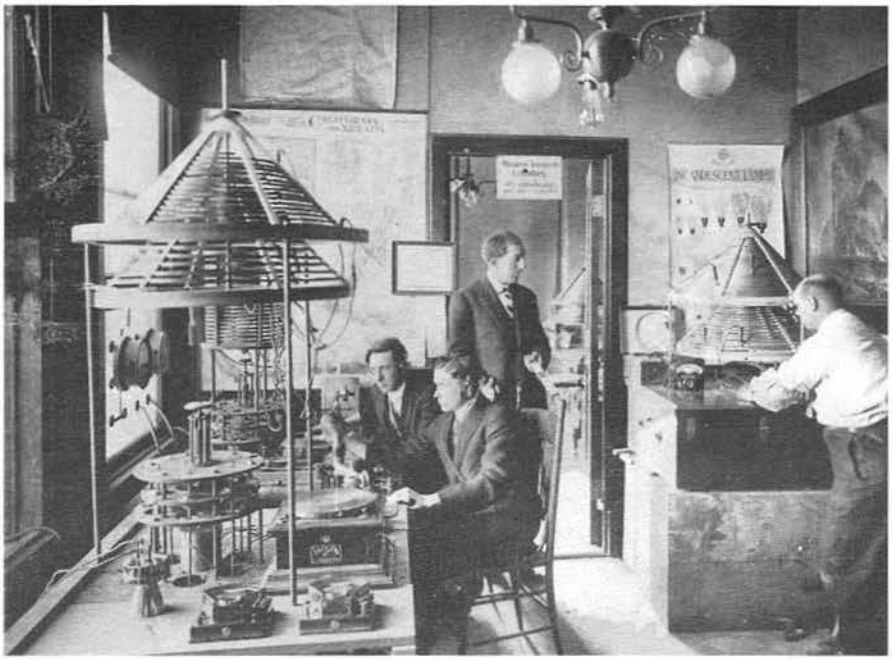
Sources:

Secondari, Richard (K6TR), in the author's San Francisco Amateur Radio Club oral history interview, notes and subsequent documentation from him, originals in the author's file

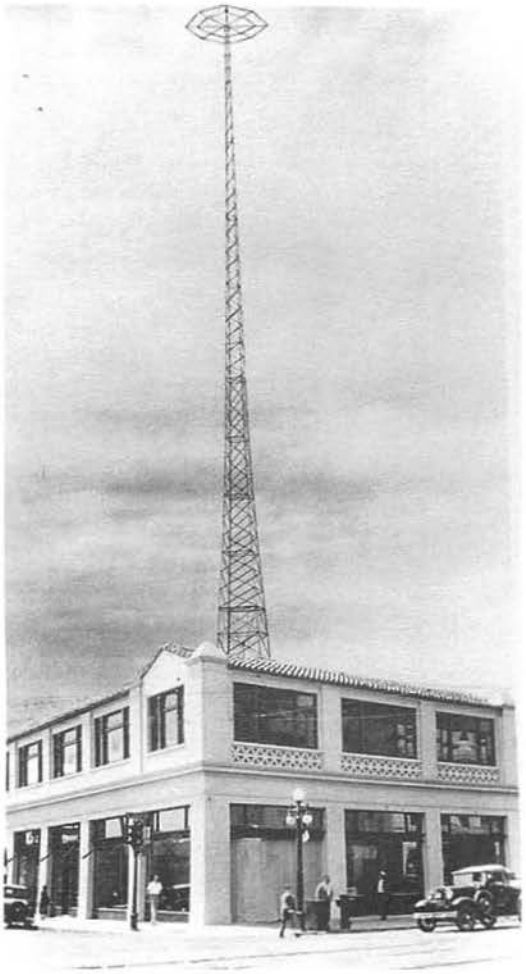
Charles Herrold, Inventor of Radio Broadcasting

A new biography by Gordon Greb and Mike Adams

The question, "Who was the first radio broadcaster and where and when did broadcasting as we understand it first take place?" has been asked since 1920. For almost 80 years the answer appearing in the history books was "Frank Conrad of KDKA in Pittsburgh in 1920." But there is another story that has been slowly uncovered which shows that the first individual to broadcast entertainment programming to an audience was Charles Herrold of San Jose in 1910. The proof is found in a new book from *McFarland and Co., Charles Herrold, Inventor of Radio Broadcasting*, by Gordon Greb and Mike Adams.



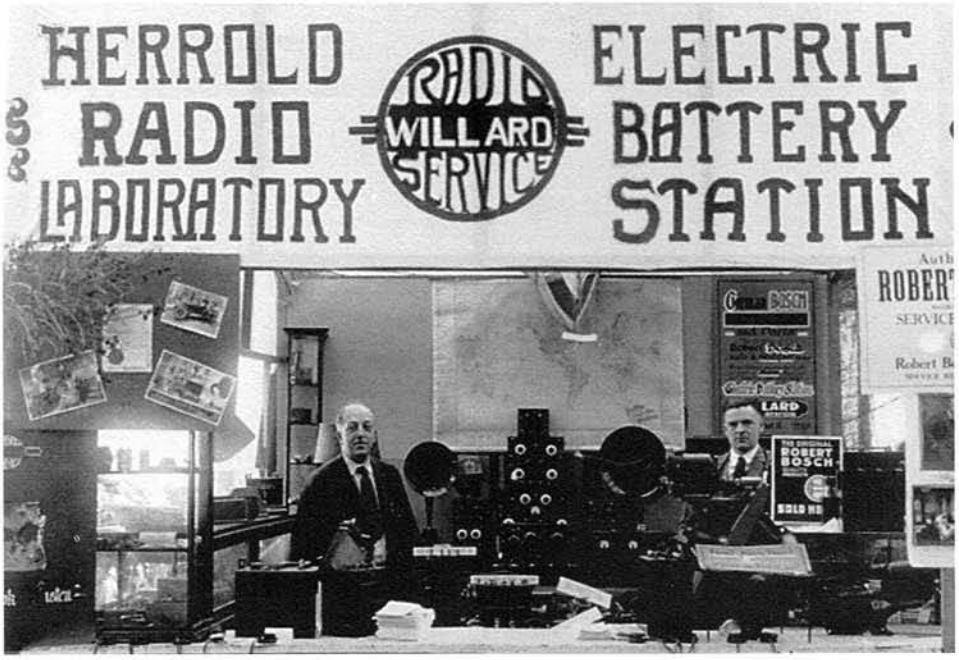
KQW c.1912, Charles Herrold in doorway



The discovery of the Herrold story began in 1958 when Gordon Greb, then a San Jose State University (SJSU) professor, accidentally uncovered the information at a local private museum. He wrote in 1959, "The Golden Anniversary of Broadcasting" in the Broadcast Education Association's Journal of Broadcasting (JOB). His article was based on collected family papers, oral histories/interviews of eyewitnesses, and other evidence using scholarly research methods. It was the first time a national academic audience heard about Charles Herrold. As a result, important post-1960 broadcast history books, Barnouw's Tower in Babel and Sterling's Stay Tuned included Herrold. Other scholarly articles resulted using the theme "first station," comparing Herrold, Lee de Forest, KDKA, and others. Suddenly, the answer to the question, "Who was first?" was getting a bit more complex. There was radio broadcasting at least 10 years before 1920.

SJSU professor Mike Adams joined Greb in 1988 in an effort to revive the Herrold story. Adams believed that Herrold remained a local curiosity story, not taken seriously by anyone beyond Northern California. A PBS video, "Broadcasting's Forgotten Father: The Charles Herrold Story,' resulted, but more importantly, the two became friends and colleagues in historical research.

Adams and Greb believed that the only way for the Herrold story to gain national credibility was for a well-researched, scholarly book to be published. The authors made trips East, to the Clark Papers at the Smithsonian History Center, the New York Public Library, and the Antique Wireless Association (AWA) archives in Rochester. Their goal was to find other examples, if any, of pre-1920 broadcasting similar to that carried out by Herrold in San Jose. What they found were several important documents describing Herrold broadcasting entertainment programming to an audience pre-1912, evidence not in the original Herrold papers and not available for use in the video. Several major articles and the book, *Charles Herrold, Inventor of Radio Broadcasting,* resulted.



As to the original question, who was first, look at the context in which that question has been asked since 1920: All previous claims to being the "first station" used RCA in-house historian George Clark's 1920 criteria: It had to include (1) entertainment programming, (2) regularly scheduled broadcast times, (3) pre-announced/advertised ahead of time in the press, and (4) intended for a known "citizen" audience. It was this last issue that caused Clark to say, and early historians to write, that all pre-KDKA, 1920 broadcasts were invalid because their audiences were largely amateurs.

This is not true. We have determined through our research that many pre-1920 (citizen) listeners heard the de Forest and Herrold broadcasts at "public" listening posts in record stores, at the 1915 Panama Pacific International Exhibition (P.P.I.E.) and on the crystal sets of their neighbors and children. Conversely, most of the audiences in 1920 were still set builders and amateurs, even though commercially built radios were available. The transition from all amateur experimenters to all citizens audiences was gradual.

Today, there is no real agreement as to a single "first station." Most historians agree that KDKA gets credit for the first "commercial" license in 1920, de Forest for his 1916 broadcast of the Hughes-Wilson presidential election, and Herrold for broadcasting entertainment on a regularly-scheduled basis, pre-announced, to an audience, 1909-17. What is known and stated in the book, Charles Herrold, Inventor of Radio Broadcasting, is that the authors found first person, written evidence indicating that Herrold beginning in 1910 was the first to intentionally broadcast entertainment programming to a known audience on a regular basis. Charles Herrold invented the radio station.

Mike Adams
Professor and Chair
Department of Television, Radio, Film, Theatre
San Jose State University
San Jose CA 95192-0098
408-924-4545
adams@email.sjsu.edu

Transistor Radio

By Jeff Hollinger

Advertising courtesy of M. Householder
photos: S. Sutley

Think back to the days of your childhood. Who besides your best friend or your brother or sister was always by your side? Give up?

The transistor radio...a small plastic box that always played your favorite songs on your favorite radio station. A companion you took into bed, on your bike, at the beach or ball game. You knew you could always count on it to bring you hours of joy.

Joy, that is, until that fateful day when you dropped it; and a big chip came out of it. And suddenly...no sound...no nothing. Into the trash it went!

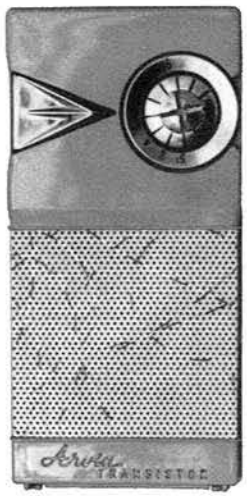
That happened to a lot of transistor radios. Millions of them. They're landfill now. Sad but true...the transistor radio was a completely disposable product. A couple of big chunks or chips in the plastic and it was bye-bye-baby.

First production all transistor radio c.1954 (S. Kushman collection)

So why are they so collectible nowadays? Well, first of all just because a radio is of the transistor variety doesn't mean it's valuable or collectible. Let's set the record straight about the transistor radio as a collectible right here, right now.

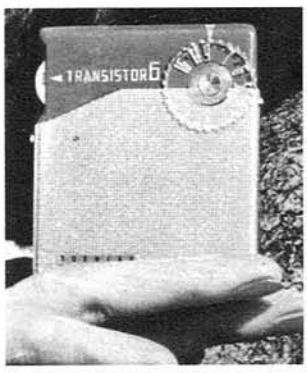
Only certain radios are highly prized and collectible. Which ones? Well, early sets made in Japan qualifies as an in demand transistor radio. We'll get back to those kinds of radios a few paragraphs from now. Early United States manufactured transistor radios are also highly regarded by collectors. Here's why:

The first transistor radios were expensive! Zenith's Royal 500, introduced in 1955 cost $75 new. The design of this radio was an entirely new concept in the look of radio cabinetry. Also, the radio was hand-wired in the early days of its manufacture. Compared to the cost of an average table radio in those days of around $25, the Royal 500 cost an arm and a leg.



c.1957 (S. Kushman collection)

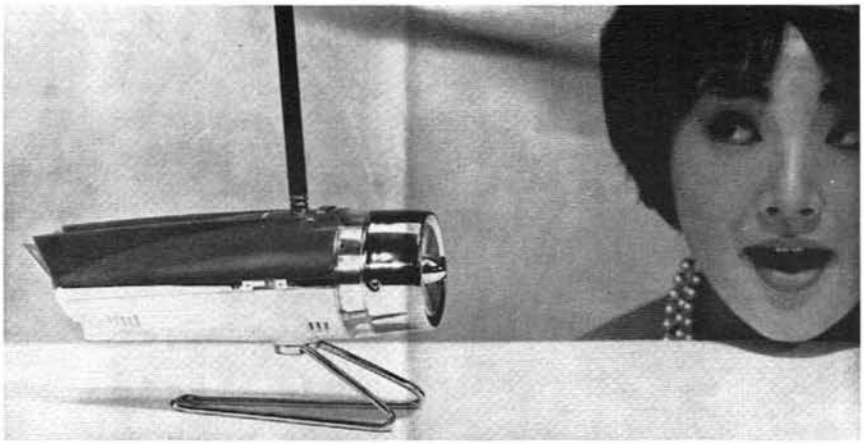
Transistor collectors break down into a number of categories. You have the Zenith transistor camps where all collectors want is every Royal 500 made in every color of the rainbow (actually, they only came in burgundy, tan, pink, black and white, but close enough.), and every other Zenith produced. And you have the "made in Japan" (MIJ) collectors, who collect only the brilliantly designed radios. You guys know who you are. (Okay, I happen to fall into this group myself.)



Japan produced some of the most beautiful transistor radios in the world. These were innovative and aesthetically pleasing radios made in all of the colors of the rainbows. (And I mean it, this time.) But not every Japan made set was beautiful. They made far more plain and unattractive radio than high-styled ones. While there are many collectors who look for those kinds of radios, the hard-core collector seeks out the harder to find radios replete with an industrial design known as reverse plastic, or reverse painting. Or...yes, even...underpainting!

Reverse painting in transistor radios bring out the amazing beauty and desirability of the radio. The heyday of this type of radio design was from 1958 through the early sixties, when the cost to manufacture radios went through the roof, and the cost of material had to be lowered considerably.

Radios with reverse plastic stand out as you can see in the pictures that accompany this article. A common motif or emblem of that time period was the chevron "V," quite a ubiquitous letter back in its day. Many treasured transistors from Japan feature various sized "V's" Other highly prized MIJ transistors feature starbursts, boomerangs, and other Space Age motifs.



Sharp

Now certainly there are other great, collectible transistors that, uh, eschewed reverse painting. The really cool ones have various metal and brass trim pieces that evoke the flashy and "finny" cars of the late 50s/early 6os. The great Sony TR-610 is quite the age o' space kind of looking radio with not an inch of reverse plastic anywhere. But...oh, oh, those rounded corners...and that round speaker grille...and the carrying handle. Back in 1958 when this came out this was quite the high-tech-looking transistor radio, me buckoos!

Collectors of transistor radios like them for their size and ease of shelf space, (as opposed to collecting German Blaupunckt(?) or Telefunken massive floor model radios - ya gotta store 'em in a large auditorium!) and because they were SUCH A THROWAWAY kind of object. If you were to go back in time and tell someone that they better hold on to their prized transistor radio because in 40 years they will be oh so collectible and fetch hundreds of dollars on ebay (yeah, might as well tell 'em about the Internet while you're at it) they would run you out of town faster than you can say Kobe Kogyo!

Yaou

A juke box that fits into a pocket.....

People saved cameras. You see boxes of 'em at the flea market. People saved everything else, it seems, except transistor radios. When was the last time you came up to someone's space at a flea market and saw a box full of transistor radios? Not too often. Well, thank God some people had the good fortune to save some of the KILLER LOOKING sets for us trannies.

We know you're out there...it's just a matter of time. Happy collecting all you fanatics!!!

Jeff is one of the premier transistor collectors/historians ed- sps

UV199 Production

By Norman Leal

WD11 & UV199 tubes are getting hard to find. Adapters or substitutes can be used but they seldom look right. Usually too large and modern mica insulators can be seen inside the tubes. Needing tubes for our Radiola IIIs and AR812s we decided to make them. Not having equipment to draw vacuum we used sub-miniature tubes inside a glass envelope the same size as originals.

Our substitute tubes are very close in appearance to the originals. In most cases they work better than original tubes. Three of us, Mike Sullivan, Elmer Thompson and myself, have worked independently on portions of the tubes and were surprised how well the project came together.

The glass portion is made from a 25mm, 1", test tube, suggested by Don Black in Australia. It was cut to the proper length and brought in at the bottom to fit into a base, using a propane torch. The base is machined from a plastic pipe end cap. Then it is drilled and painted black. Pins made from .125" copper tubing are inserted. For the WD11, large pin, .1875" copper tubing is available. If a bayonet pin is required, 14 gauge brass may be used. Test tube glass is silvered using the same process as telescope mirrors.

A 5676 sub miniature tube is mounted inside the glass. This triode has a 1.25 volt filament. When a higher filament voltage is required a resistor may be added inside the glass, wired in series with the filament. The 5676 is rated to 135 volts, plate so they can be used to replace most early battery radio tubes. Pins and glass cover are held in place with epoxy.

These tubes are more uniform, less microphonic and have greater gain than original UV199 or WD11.

TUBE LORE

Supplement 3 to the book **Tube Lore** is available. At 24 pages, it replaces the old 8-page supplement- adds fresh info on Rogers tubes, and gives new details on early Western Electric tubes and sockets. It reveals the date code for RCA receiving tubes of the '50s-'70s, adds some odd and little known receiving types, unveils some previously unknown special-purpose tubes, and introduces the present-day (!) "DOD" series of military tubes. The 200 "most-often-needed" basing diagrams, covering 1300+ tubes in everything from Trans-Oceanics to R-390A/URRs to Dyna Stereo 70s, are added. So are the pinouts for post-1948 Western Electric tubes that've never been published before. And there's an expanded index.
This item is available from **Ludwell Sibley. 102 McDonough Rd., Gold Hill, OR 97525-9626.**
Please print your name and address clearly!

Update to the essential reference compendium by renowned author Ludwell Sibley. ed-sps

Tube Collector

The Tube Collectors Association is a nonprofit, noncommercial group of individuals active in the use, history, and preservation of electron tubes. The Tube Collector, its bulletin, appears six times per year. (annual dues $20 in N. America)

TUBE COLLECTORS ASSOCIATION, INC.
PO Box 1181
Medford. OR 97501
www.tubecollectors.org

This highly active group of vintage tube experts continues to share world class insights into vacuum tube electronics. If it glowed, these members have an interest in preserving, using, and documenting its behavior and place in the collector's world. The Tube Collector's journal and association activities bring together an ever-expanding network of tube enthusiasts with an emphasis on tube history and technical application. The membership reads like a Who's Who of tube historians and radio connoisseurs, giving you easy access to their resources. A very sage and selfless pursuit brought to print that deserves all the support the radio community can dial up. Glow on gentlemen! *ed.- sps*

photo courtesy of Steve Kushman

Calling all earthlings... come in, over...

back cover courtesy of Alan Voorhees

Late Renewal Form - 2004

Please cut this out or mail information to:

CHRS
P.O. Box 31659
San Francisco,CA 94131

Name _____

Address _____

_____

Phone /e-mail _____

☐ $20 enclosed for annual membership (others available)

☐ I am donating a tax deductible _____ for the CHRS project and museum fund or objects for the museum

☐ I can volunteer time/items to help CHRS

Contents

P.O. Box 31659
San Francisco, CA 94131

(415) 821-9800

CHRS on the Internet:
www.californiahistoricalradio.com/chrs

Presorted Standard
U.S. Postage
PAID
Cupertino,CA
Permit NO. 635