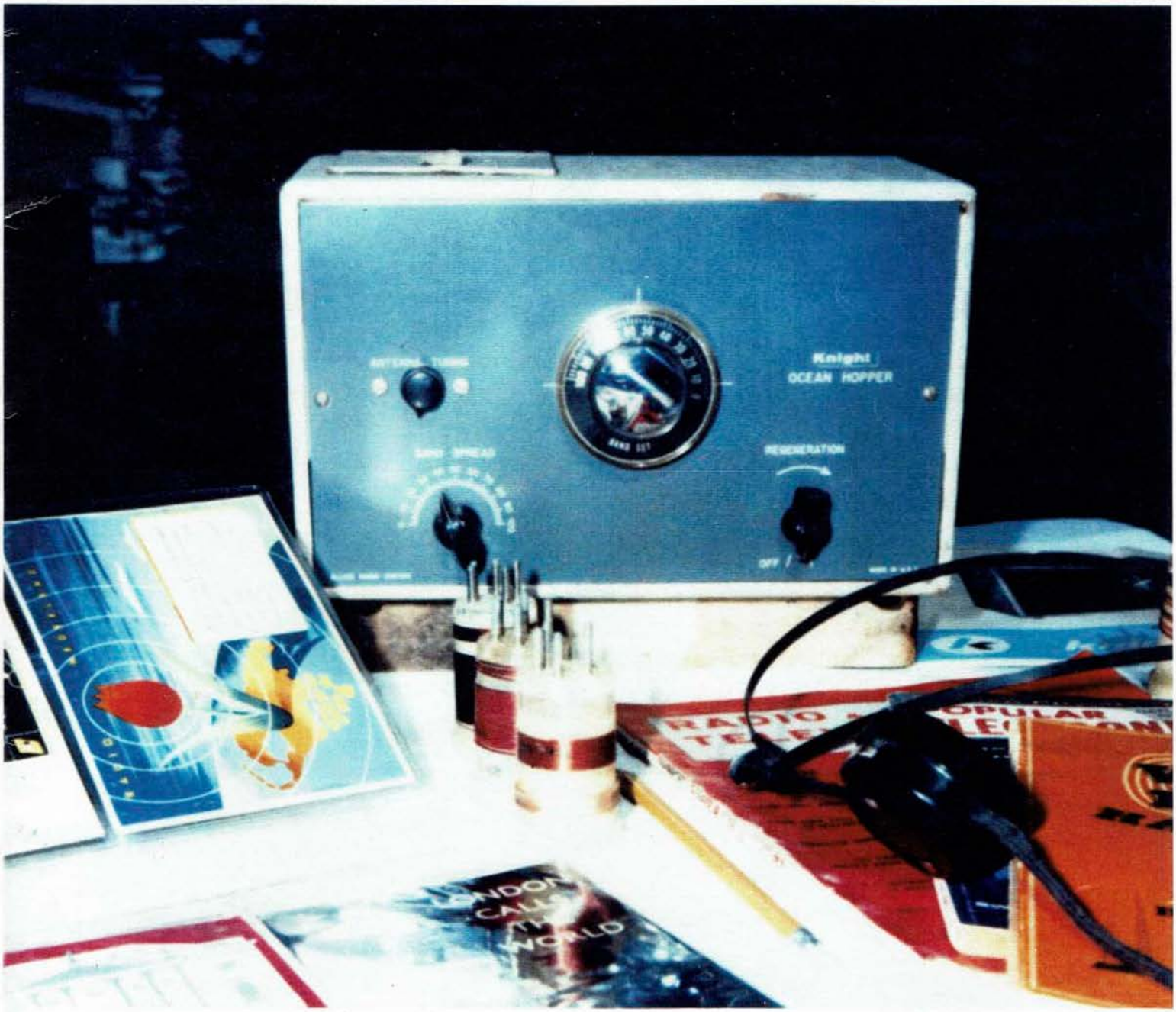
SPRING, 1994
VOL. 18, NO. 1

JOURNAL OF THE

CALIFORNIA HISTORICAL RADIO SOCIETY

FOR THE RESTORATION AND PRESERVATION OF EARLY RADIO



The Ocean Hopper by Allied Radio, c. 1957, and QSLs

California Historical Radio Society

Spring 94 Journal Co-Editors:
Bart Lee and John Eckland

ON THE COVER: The Ocean Hopper and 1950s QSL Cards (Vol. 18, #1)

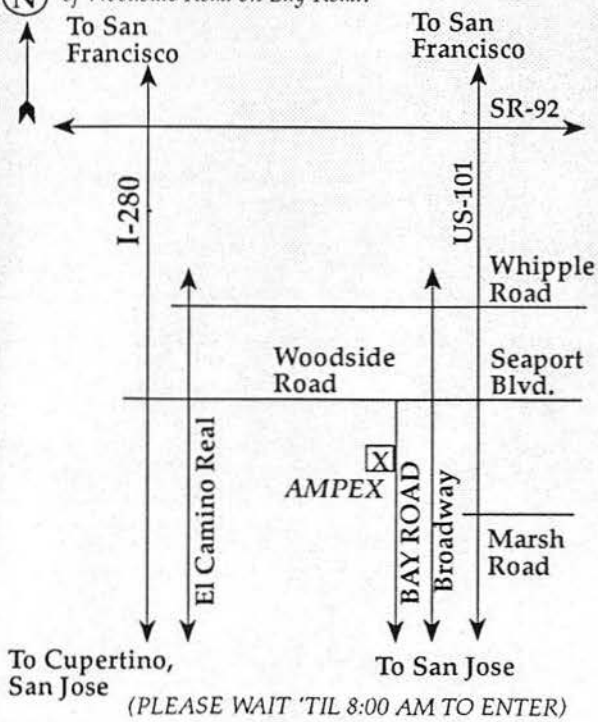
MEETINGS and SWAP MEETS: CHRS meetings are held 2-3 times per year. Locations are announced in CHRS publications and by mail. Swap meets are in February, May 7, August 6, and November 5 at Ampex Corporation in Redwood City, PLEASE DO NOT ENTER BEFORE 8:00 AM. Regional meets at various Northern California locations are conducted from time to time. Contact the Publicity Officers if you want to sponsor a swap meet in your area. Local swap meets bring out new old radios!

ABOUT CHRS

The California Historical Radio Society is a non-profit 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 in collecting, literature, programs, and the restoration and display of early equipment. The *Journal* of the Society is published periodically in printed and occasionally in audio tape format, and is furnished free of charge to members. Yearly membership dues are $15.00 (US funds, please). Submissions for the *Journal* are always welcome. Typewritten copy is preferred, submitted on 3.5 inch IBM or Macintosh diskettes in ASCII or Microsoft Word. Send all material to editor Bart Lee and include your name, address and phone number. You write about radio, and we'll print it. --CHRS, P.O. Box 31659, San Francisco, CA 94131; Phone (415) 978-9100.

Map to AMPEX Corp. Swap Meet

Go to Lot "C" Three stop signs south of Woodside Road on Bay Road.



(PLEASE WAIT 'TIL 8:00 AM TO ENTER)

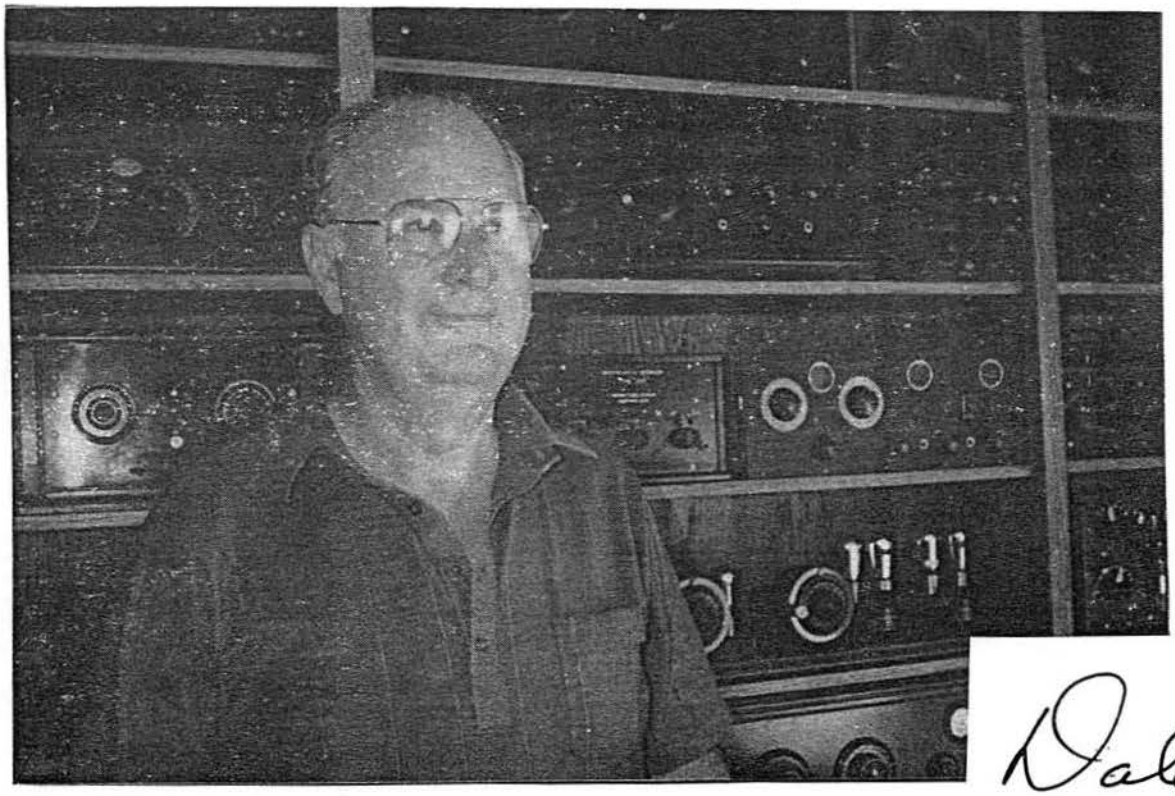
PRESIDENT'S MESSAGE From Dale Sanford,

107 St. Thomas Way, Tiburon, CA 94920, (415) 435 6131; CHRS Newsline: **978 9100**

Thank you for electing and trusting me to be the President of the California Historical Radio Society for 1994. The previous leadership is a hard act to follow, especially Paul Bourbin and Adam Schoolsky, who have given me a lot of help along the learning curve. The past efforts of the CHRS officers, Directors and volunteers supplied the glue that held our society together, and any suggestions or ideas that you can give me will help a lot. The task of production of the *Journal of the California Historical Radio Society* has again been taken on by Vice President Bart Lee with assistance from John Eckland. They need help from anyone who would like to write a radio-related note of any sort, or who can help with the actual production process, especially Desk-top publishing.

Our parking lot events continue to be very successful. The first Ampex meet in February broke all records. The March Benicia event was held under grey skies, but no rain dampened spirits. The April joint Sacramento Historical Radio Society and CHRS meet held at the Towe Ford Museum was the largest Sacramento meet I have ever attended.

Our new 8 AM starting time is paying off with a better turn-out of both buyers and sellers. Other clubs are beginning to take notice of how civilized our CHRS meets are compared to the pre-dawn feeding frenzies. Be sure to mark your calendars with the upcoming events and do bring cash, but we can leave our flashlights at home now. NOTE: August 6, 8 AM at Ampex, and note the CHRS telephone newsline: (415) 978-9100. -- Dale. ##



Dale

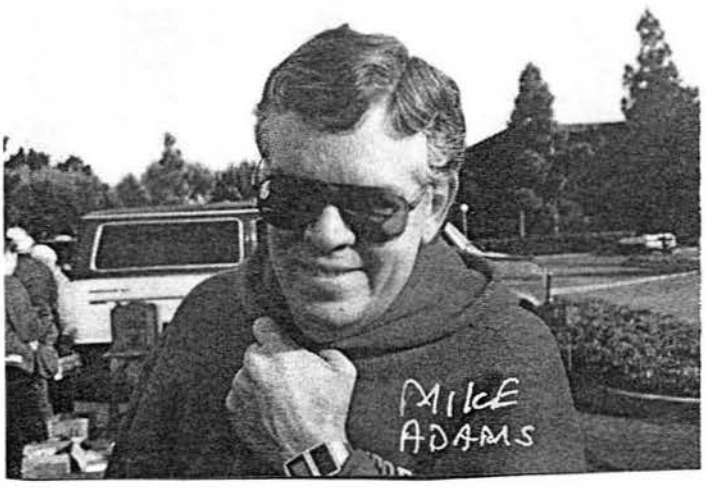
BROADCASTING'S FORGOTTEN FATHER; *THE CHARLES HERROLD STORY*

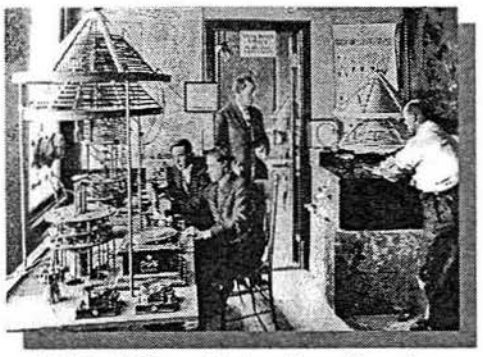
A television documentary on early radio from Mike Adams.

Charles Herrold (1875-1948) is one of Broadcasting's forgotten fathers. From his wireless college in San Jose, California Herrold transmitted between 1912 and 1917 weekly programs of music and talk designed to entertain a small but loyal audience. This was ten years before licensed radio broadcasting, before even the word "radio" was popularly used. His broadcasts happened at a time when most wireless transmission was two-way communication using Morse code and the perfection of the vacuum tube transmitter for voice was still several years away. Herrold used a crude arc transmitter of his own design to present regularly scheduled broadcasts. He may have been ahead of his time. But most people know very little about his life, his work, or his significance. He has all but vanished from history. Until now.

Mike Adams, Professor of Radio and Television at San Jose State University, has been researching Herrold for several years. Based on the pioneering 1958 research by retired San Jose State professor Gordon Greb, Adams was able to read all the collected papers, patents, drawings, and correspondence of Herrold, and he has located and restored old film and put onto videotape several hundred photographs that illustrate the Herrold story. Adams has also interviewed historians, eyewitnesses, and surviving Herrold family members and friends in an effort to tell the complete Herrold story. In an effort to place the documentary material in the context of the wireless hobby, dramatic re-creation is used to show the excitement surrounding the discovery of a new technology, and its influence on the young men who were Herrold's students, circa 1912.

This one-hour documentary was produced, written and directed by Adams in association with San Jose PBS station KTEH. They will distribute it to PBS stations nationwide. The Perham Foundation is making copies available locally, for $29.95: write to them at 101 N. First Street, ste 394, Los Altos, CA 94022. ##





1912, A Herrold Arc Fone Broadcast

Concert by Wireless Heard by 300 People

Music Clear and Distinct, States Man Who Was on "Wireless."

Edward Bellamy's prophecy in "Looking Backward" that some day people would turn on a button and listen to music played and sung at a central plant, came true yesterday in San Jose when the wireless operators of the city and beyond

1916, San Jose Mercury Herald

FROM THE VEEP

By Bart Lee, xWPE2DLT
327 Filbert Steps
San Francisco, CA 94133
(415) 788 4072

Correspondence is invited

Paul Giganti received his Doc Herrold CHRS award for outstanding achievement in the preservation and documentation of early radio. CHRS Treasurer Will Jensby presented it to him in his home (Paul doesn't get about as much since his stroke). George Durfey took the nearby photo. George adds: "Paul is a very special person. I think very highly of him. He is such a loving and caring person. In his pursuit of vintage radio collecting, wheeling and dealing, he has been most fair and honest. He sets the best example for many in our hobby..." I, too, think very highly of Paul for all the same reasons. He has been attentive to the wants of many collectors, while at the same time showing himself to be the warm and genuine person he is. I treasure his acquaintance, and envy his friends. Paul once told me how he does business: a straight 20% mark-up, no more, but often less. From my breadboards to my WW II National 1-10, I wouldn't have the prizes in my collection without Paul. Thank you, Paul, from all of us.

CHRS will soon absorb the Sacramento Antique Radio Club, which will become a division, like Norm Braithwaite's North Valley Chapter. We can also form other divisions as well, if you live in an outlying (from the Bay Area) area, and would like to meet as CHRS on a regular basis. Swapmeets in your area can be arranged and publicized through CHRS.

The Electronics Museum of the Perham Foundation has entered into a letter of intent with the San Jose Historical Museum in Kelly Park, to re-institute the Electronics Museum in the Park. Fundraising will soon begin, as will architectural planning. The Foundation plans to locate its temporary offices in Kelly Park near its proposed permanent site.

Those of you who have been paying dues regularly will be glad to know that as of May 6, 1994 our cash balance was $8,899.54, according to long-time Treasurer Will Jensby. From this, the year's two printed Journals and two audio tapes will be paid for. CHRS will also spend some money this year on outreach.

CHRS needs people to handle specific tasks, such as advertising and outreach. Many stalwarts do the work of the club, but we could do more with more hands. We need help with the Journal as well, particularly a good typist for entry of submitted text, either in San Francisco or Palo Alto. Anyone with desktop publishing experience (we want to use "Personal Press") would be a great help. Please volunteer to the President, Dale Sanford, (415) 435 6131.

In honor of the fiftieth anniversary of D-Day, the next audiotape Journal will present not only the WOR first radio-

facsimile program, but also World War Two recordings made from short-wave broadcasts from the enemy, and home front broadcasts. The enemy broadcasts capture the frightening future the Nazi's had planned for us. The home front broadcasts present the morale and the music of the times. These recordings are from the National Archives. The WOR recording is from my collection. Thanks again to Bill Healander for preparing these tapes for us for so long. Bill is one of the unsung heroes of CHRS, without whom we would be less of a club.

Our Radio Stamps article and cover has resulted in world wide publicity. On June 4, radio station HCJB from Quito, Ecuador, presented Neil Carleton's Radio Stamps program as part of the DX party-line. Neil devoted most of his broadcast to the CHRS Journal. If the quality of the recording is OK, we will include the program in the next CHRS audio Journal. We have also been in touch with stamp collectors in Europe, and the article will be reprinted in the German journal HAMSTAMPS. I am still looking for a BBC radio tax stamp. I have also discovered a new (for me) kind of radio stamp, those affixed by national QSL bureaus to ham QSL cards they transmit. Can anybody help with any of these stamps?

I collect radio-related paper as well as old radios. One striking example is the cigar box label "Radio Queen" from the 1920s, which we have reproduced on the back cover. If anyone else has any colorful radio paper they would be willing to have on the cover in color, please let me know.

I have noted that the antique-world newspapers are currently featuring little plastic radios, and not just catalins. This may mean some unusual demand is in the making. Maybe there is treasure in those basements! Anyway, some photos from the antique-dealing press are reproduced in this Journal. Also, an order form and advertisement for Lindsay Publications is reproduced. Mr. Lindsay, who is also an amateur radio operator, makes copies of wonderful old radio books, and sells them to us cheap. I think I have bought every one of them. They are well worth their modest price and more. CHRS recommends Lindsay Publications.

The other photo nearby is Chairman Emeritus Paul (Why is this Man Smiling?) Bourbin demonstrating to me one of the necessary techniques of club discipline for collecting from non-member sellers at the swapmeets. By making the seller's fee the membership dues, we have simplified this aspect of our work.

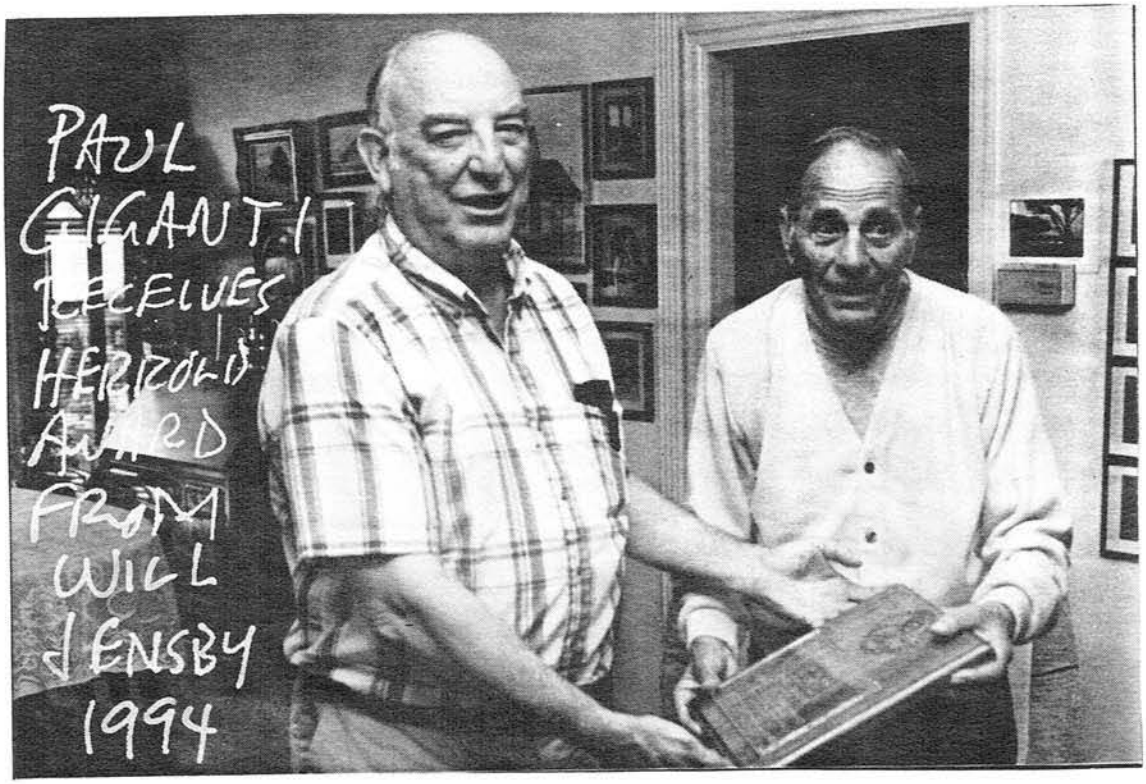
The next Journal will be a twenty year archive of this club, founded in 1974. In those days, about the only antique radio information to be had was in Elementary Electronics, in James A. Fred's Antique Radio Corner. The Antique Wireless Association had been founded earlier, and was beginning to hold joint meets around the country, but sought to limit its membership. Interest was mounting in the hobby and the history, so the Antique Radio Club of America was formed as a membership organization.

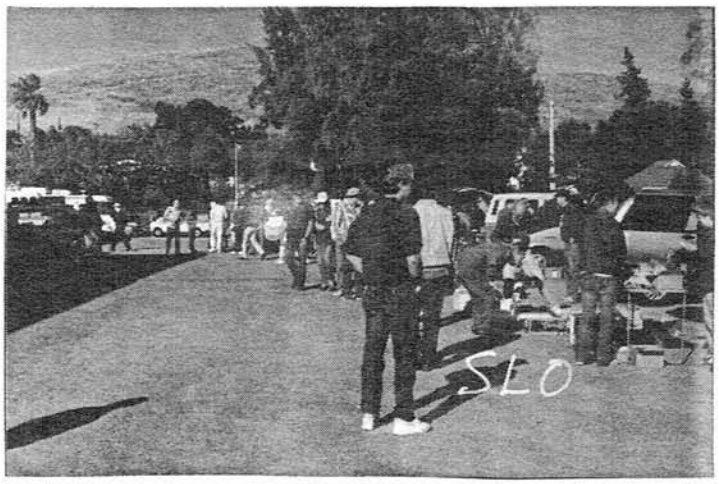
One thing to note about the good ol' days of twenty or more years ago in our hobby was that creating replicas of early Atwater Kent breadboards, particularly the model Five (e.g. 4052) was a popular sport. See, e.g. the photo of a replica 4052 in Mr. Fred's column of May-June, 1975. I have noticed this replica building in other sources as early as the 1950s. I wonder how many of those replicas, now themselves at least 20 years old, still bear any indication that they

are replicas rather than originals? As in the antique business, a trustworthy provenance may be the best sign of real value, especially with Atwater Kent (and deForest) equipment selling for astronomical prices. I have heard of prices of $5,000 for a model Five. Before I paid that kind of money, I would sure like to meet the old lady who had been keeping her grandfather's radio up in her attic all these years.

We are always looking for good ideas "for the Restoration and Preservation of early Radio and Radio Broadcasting" [which is our official motto]. Please share your ideas with us. - 73 - Bart. ##

Bart





MORE ON STAMPS

As mentioned in the Report from the Veep, Radio Station HCJB gave CHRS some great, world-wide publicity in June. There follows a partial transcription of the Radio Stamps program on the station's DX party line:

RADIO STAMPS, by Neil Carleton, P.O. Box 1644, Almonte, Ontario, KOA 1AO, Canada 613-256-2018.

Hello again, and welcome to Radio Stamps. A special welcome, as always, if you're listening to the program for the first time. You're tuned to the monthly show that's all about the fun of collecting stamps on the topic of radio. This program combines the fun of listening to international radio and collecting stamps from around the world all about radio. There are dozens of radio subjects on which you can collect stamps.... Collecting stamps on the topic of radio is another great way to enjoy the radio hobby.

Today I have reports from New Zealand and the United States about a new issue of a radio stamp, and a great article that was published about collecting stamps on the topic of radio....Thank you today as well to Bart Lee of San Francisco, in the United States, for a copy of his illustrated article about collecting radio stamps. Bart's article, titled 'Radio Stamps - On the Cover', was published in the Fall 1993 issue of the Journal of the California Historical Radio Society. The Society is a non-profit corporation, formed in 1974 to promote the restoration and preservation of early radio and broadcasting. The Journal is published quarterly. On the front and back covers of the Fall 1993 edition, in wonderful full color, are photographs of radio stamps. Bart's illustrated article, which introduces collectors to radio history, inventors and stations on stamps, is on pages 13, 14, and 15. He also includes historical references to articles about radio stamps that I've been hunting for over the years. I'll be adding those references and Bart's article to my 1994 Radio Stamps Bibliography. This updated listing of published references, expected to be about 14 pages, will be available in December. I'll have more details for you later in the year. Bart welcomes correspondence about his article. Many thanks Bart for your great article.

Well, that's all for today's program. I hope you'll write to me soon as a Radio Stamps reporter with news for the program from your part of the world. Your comments and suggestions for the program are always welcome.... Until the next time, best wishes for good listening and collecting.

Editor's Note: Neil's prior Radio Stamp Bibliography is quite thorough, and the new one looks to be even better. He would be happy to hear from CHRS members interested in Radio stamps. ##

KADETTE MARKETING ERROR

by Arthur F. Adams, N6HLP
1801 Fulton Street
Palo Alto, CA 94303

College marketing courses usually include case histories of classic marketing errors to point out approaches that should be avoided when marketing a new product. Two outstanding cases are the Edsel, where the wrong product was introduced at the wrong time, and New Coca Cola, where an old established product was tampered with. Both of these resulted in significant losses to their companies. One case seldom studied concerns a marketing decision made by the International Radio Company of Ann Arbor, Michigan in the late 1930s. They introduced a product customers wanted, at a price much lower than the competition, with good advertising, reasonable performance, adequate supply, right timing, and the product was profitable for the company. Yet within a year after its introduction the company lost the significant market lead it previously held and nearly went out of business. What went wrong?

In the early 1930s two basic table radio designs evolved. One was the four tube, tuned radio frequency circuit (TRF) of limited performance and the other was the five tube superhet, a design which became a standard until solid state electronics took over. On some designs the tube complement was increased by the use of a plug in resistor called a ballast tube which was included to fill in the tube heater string. This also had the effect of making the customer think he was getting a better radio because it had an extra tube. This image was an important sales gimmick since at this time it was believed that the more tubes the radio had the better it was. International Kadette, however, pushed the use of ballast tubes to the limit.

In 1938 International Kadette introduced a 10 tube table radio priced at $19.95! This was a sensation in the industry since at that time 4 and 5 tube radios were generally priced between $10.oo and $35.oo. In order to get a 10 tube radio you had to pay over $100.oo! (Incidentally, to get a better feeling for the price of radios at this time, you should multiply all of these prices by 10 to arrive at today's equivalent prices). The Kadette radios had attractive wood cabinets with ornate dials and reasonably good tone. The RF performance, however, was equivalent to that of a typical five tube radio.

The fact that the RF performance was the same as a typical five tube radio was not surprising when you look at the circuit. Models 1019 and 1023 are good examples of this series. The radio was in fact a standard five tube superhet with two additional tubes which performed essentially useless functions. To this tube complement was added *three* ballast tubes. To further the image that the radio was a high quality item, the tube heaters, which could have easily been wired into a single string, were wired into two parallel strings in order to double the receiver current drain. This higher power usage obviously meant that this was indeed a better radio. Since Kadette's principal markets were the large metropolitan areas of the Midwest, the average RF performance of the set was not much of an issue. There were some sensitivity complaints but not enough to affect sales.

At this point a word or two should be said about radio retailing in the 1930s. During this time fair trade laws were in

effect which meant that manufacturers could specify a sales price for a product which would apply to all dealers large and small. This meant that prices could not discounted as they are today. As a result most radio sets were sold through local independent dealers inasmuch as there was no price advantage in going to a large store. Also, if you bought from a neighborhood dealer you could get better service. To gain some price advantage large stores often marketed their own house brands. Typical of these were Sears (Silvertone), Montgomery Wards (Airline), Walgreen Drug (Aetna), Goodyar (Mantola), and others. Usually an average dealer would carry one premium brand such as Philco, RCA, Zenith, or Westinghouse, and two or three lower price brands such as Howard, Sonora, Continental, Colonial, Emerson, or Kadette. Kadette was very popular in the Midwest for reasons mentioned above.

When the 10 tube Kadette was first introduced, dealers were pleased with the rapid turnover they had. After a few months, however, things changed. During this time profit margins on radios ranged from about 12% to as much as 35%. The lower priced radios carried margins ranging from about 12 to 15%, including the 10 tube model. Dealers soon found themselves looking at the dust collecting on their premium sets with the large margins while the Kadettes were selling well. One would have to sell as many as 12 of the 10 tube radios to achieve the profit of one moderately expensive Zenith. Also, since the 10 tube radio was selling so well, International began forcing dealers to take a number of other Kadette radios along with each 10 tube hot-seller they ordered. In order to get rid of the other slower selling Kadette sets, dealers had to offer under-the-counter discounts. This meant that their aggregate profit on Kadette radios would often drop to 5 or 6%.

One by one dealers began to drop the Kadette line. Over a few month period International lost a significant part of its dealer network. When they discontinued the 10 tube series and revised their selling approach it was too late to recover since by this time dealers found that there were other good sources of lower priced radios which carried better profit margins. International never fully recovered from this debacle and ceased being a significant radio manufacturer. ##

RADIO RETAILING, MAY 1933

OCEAN HOPPING DREAMS

by Bart Lee, xWPE2DLT
327 Filbert Steps
San Francisco, CA 94133
(415) 788 - 4072
Correspondence is invited.

Allied Radio provided many of us with our first real radio, in the 1950s. A real radio had a short wave band. There were other sorts of radios around, of course. We had listened to broadcast stations on home radios, hearing distant stations at night as the world opened up for us, into nearby states. Then, too, we or relatives or family friends sometimes had big consoles or table models with short wave bands, and then the world really opened up: London, Moscow, Paris! What Allied Radio offered us was a real short-wave radio we could build ourselves, from a kit, that would tune not only all of the short-wave bands, but also the broadcast band we knew, and even long-wave. It was called the Ocean Hopper; what a deal!

The kit was cheap, $11.95, although of course that was a considerable sum in kid money in those days. It was a regenerative receiver, which sounded pretty good to those of us not conversant yet with such circuits as the superheterodyne. It promised "every type of radio transmission" and it held out the prizes: "AM broadcast, marine, aircraft, distress channels, direction finding, Amateur, frequency standard, foreign broadcast, and police." Its three tubes could power a speaker. You could buy a cabinet for it for three bucks and coils for 65 cents each (except long-wave, which cost 79 cents). 1957 was a wonderful year.

Allied Radio had a catalog that was the wishbook of the Carl and Jerry set. Every month, Popular Electronics reported on the current electronic/radio adventures of Carl and Jerry. They even rescued an occasional damsel in distress. These were the guys for whom the English language had to invent the word "Nerds" long before Bill Gates, in typical nerd fashion, connected hobby electronics to the capital markets, for a personal net worth of six gigabux. Carl and Jerry knew about radio. We knew about radio. What we wanted was a radio with the magic powers of all band reception.

Allied obliged with the Ocean Hopper, presented in all its glory in every catalog.

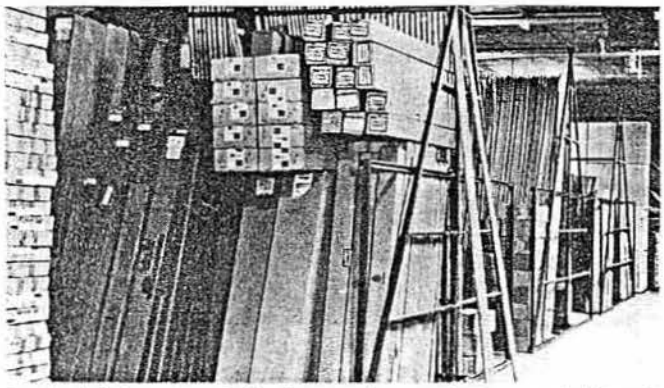
Allied Radio itself had a glorious history, and alas, it is no more. Simon Wexler founded it in 1921 as Columbia Radio Corporation, selling crystal sets. He died in 1955 at age 56, and the company continued on for many more years. As a distributor, Allied sold 20,000 items from 500 sources of supply, from 147,000 square feet of floor space in Chicago in 1954 , with expansion then planned. (See SIGNAL magazine, March April, 1954, at p. 26: "Allied Radio;" some illustrations nearby come from this article). Of Allied Radio's class, including its competitors, Lafayette Radio and Radio Shack, only the Shack survives (still selling tubes by the way, and short wave radios).

Allied introduced the Ocean Hopper in 1946, powered by a 12J5 and a 117P7, octal tubes. Lloyd D. Apt, no doubt its designer, wrote it up for Allied in the December, 1946 issue of Science And Mechanics, (p. 167). Its circuit featured a grid leak regenerative detector: "...still the best to use when you want highest possible sensitivity from one tube." Radio Experimenter reprinted this Article in 1950. Oddly enough, the name Ocean Hopper was already more than 10 years old. In 1935, radio pioneer Lawrence M. Cockaday, and S. Gordon Taylor, designed a multi-tube, multi-band superhet for Radio News, at the peak of the short-wave craze. (See "Presenting the Taylor-Cockaday Ocean Hopper," by John H. Potts, Radio News, November, 1935 at p. 266; "Testing..." December, 1935 at p. 345 and "Added Features..." January, 1946 at p. 411. Construction blue-prints were available for 50 cents.

The 1957 "Knight Kit" Ocean Hopper employed miniature tubes, a 12AT6, a 50C5 and a 35W4. It was a hot little radio (model number 83Y749). With a good antenna, short wave stations from around the world did indeed roll in at speaker volume. It could bloop and squeal if the regeneration control went too far, and the antenna trimmer was critical and suffered from hand capacitance effects, but it was indeed a real radio. For most listening, earphones plugged into the back. Allied sold a set of such high impedance 'phones under the Lincoln brand, with the appropriate and even then old fashioned phone tips rather than a plug on the end of the cord.

The regenerative sets blooped and beeped, and in the 1920s, the sets using this circuit were actually known as bloopers. Each

Terminus of conveyor belt to shipping department. After merchandise is checked, pans are placed in bins shown at the side of packers' tables which are located on each side of the belt.



On the left is a view of the floor stock area showing special bins for antennas and masts. On the right is a view of Allied's large salesrooms. Leading off the main sales area are two high fidelity equipment demonstration studios and a "Ham Shack" for amateur gear.

Allied Radio Corporation's recently built home at 100 North Western Avenue in Chicago.

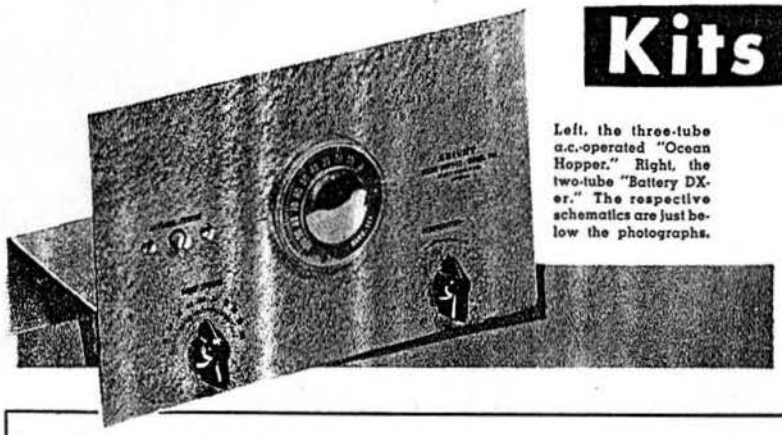
such episode of oscillation sent out audio feedback modulating RF back up the antenna. Direct interference with nearby and sometimes distant receivers resulted. All radio services frowned on this kind of QRM. Stanley Caesar writes: "Back in 1954 I used to have one of these little radios and I would leave it on all the time. I did not know that when it drifted into regenerative mode it was transmitting a signal, The FCC tracked it down with a direction finder and confiscated my little radio." Mr. Stanley was quite pleased to get another one in 1988.

Professor Harold Cones is known as Dr. DX in the listening hobby. He, too, started out with an Ocean Hopper. His 1988 note comparing the Ocean Hopper and the Japan Radio NRD-525 is reproduced in a sidebar. It appeared in FRENDX December, 1988 (now known as the NASWA Journal of the North American Short Wave Association.).

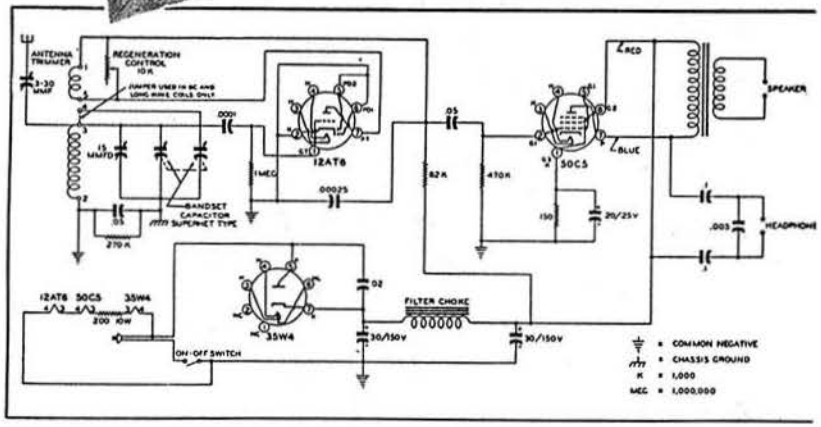
My Ocean Hopper got me involved in the Cold War. I wrote away for a QSL card in May of 1958 to Radio Moscow. James Jesus Angleton of the CIA was sitting in the main New York post office opening all the mail to eastern Europe in those days. The CIA kept a copy of my envelope for almost 20 years (and for all I know, they may still have it). This bizarre event got the attention of Playboy Magazine in the February, 1989 issue. John Dentinger wrote about "Two Hundred Years of Postal Spying" (p. 44). He reported "Among those whose mail was read and photocopied were Richard M. Nixon, Edward Kennedy ... and a 12 year old short-wave-radio listener who wrote to Radio Moscow." (That's the closest I've ever gotten to the Playmate of the Month).

The Ocean Hopper opened worlds for many kids of the era. It opened the radio frequency spectrum, from 200 kHz to 30mHz, to the careful attention of enthusiastic young listeners. Regeneration amplified the minuscule antenna currents resulting from every service and type of transmission, broadcast, amateur and utility. The sunspot peak of 1957-'59 has yet to be equaled, and the signals rolled in. Stations happily responded to requests for QSL cards from eager young listeners. Those were the days, the days of Ocean Hopper dreams. -- 73 --

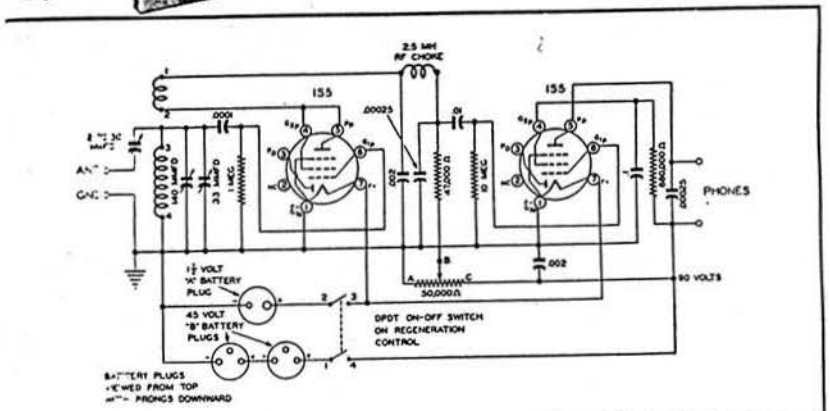
Kits of the Month



Left, the three-tube a.c.-operated "Ocean Hopper." Right, the two-tube "Battery DX-er." The respective schematics are just below the photographs.



Here are two simple and inexpensive receiver kits which cover most amateur bands and the short-wave and regular broadcast bands.



HOW many people have sometimes thought that they might be interested in short-wave listening, yet have hesitated to invest in a regular communications receiver because of doubt that the short-waves offer enough to justify the investment? It is possible to get a low-cost sample and at the same time learn more about electronics. Just build a short-wave kit!

Two simple, inexpensive all-wave receiver kits available for the novice are the *Knight* Model 740 "Ocean Hopper" Kit and the *Knight* 2 Tube Battery "DX-er." Both are marketed by the *Allied Radio Corporation*. The "Ocean Hopper" operates from 117 volts a.c. or d.c., uses three tubes, including a rectifier, and will operate a loudspeaker. The "DX-er" is a battery-operated receiver intended for headphone listening only, using two low-drain tubes.

Both of these receivers use plug-in coils to cover six wave bands. Both receivers cover the regular AM broadcast band as well as short-waves, and the "Ocean Hopper" also covers one long-wave (low-frequency) band. The actual frequency range of the "Ocean Hopper" is from 155 kc. to 35 mc. The "DX-er" covers from 550 kc. to 31.5 mc.

Each receiver has three controls, a bandset or main tuning control, a bandspread or fine tuning control, and a regeneration control. An antenna trimmer also is provided on each set; this adjustment does not have to be changed every time a different station is tuned in, but maximum efficiency will be obtained from the antenna used if the antenna trimmer is reset whenever the operating frequency of the receiver is changed by a large amount.

Each kit includes schematic and pictorial wiring diagrams, assembly instructions, and all parts and material required, except hookup wire and solder. The coils used are factory-wound, which not only saves the builder the time and trouble of winding his own coils, but assures him that they will function as intended without any "cutting and trying." The only tools needed are a soldering iron, a pair of long-nosed pliers, a diagonal cutter, and one or two screwdrivers. Even a beginner should have little difficulty in putting either receiver together so that it will work properly.

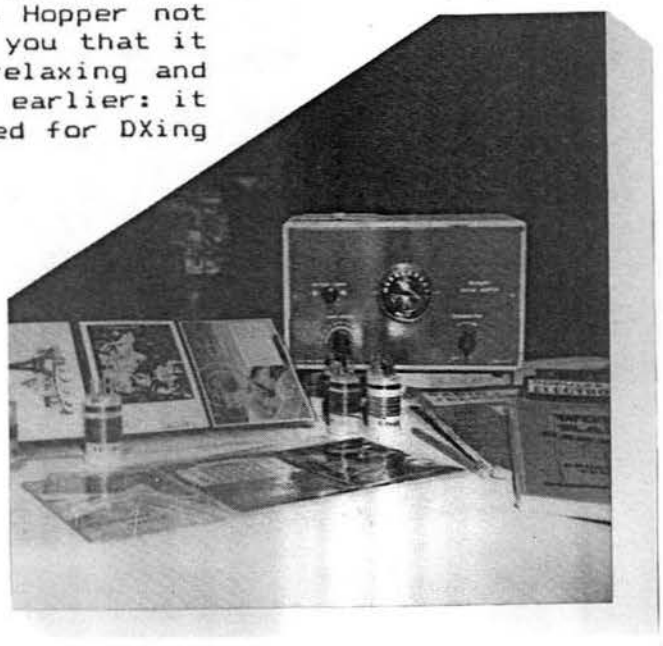
These receivers are not intended to compete with expensive, multi-tube communications sets. They are relatively inexpensive in that each complete receiver costs twenty dollars or less. Naturally, they lack some of the features of more elaborate receivers; they are less sensitive and less selective. Tuning them is somewhat more difficult since they use regenerative detectors and the regeneration controls affect both tuning and volume.

Dials are not calibrated directly in frequency, but have a single 0-100 scale for all bands. The dial reading for any station will vary somewhat between receivers, because of variations in coils, tubes, and the placement of wiring by the builder.

Those who become seriously interested in short-wave listening will want a receiver with conveniences which these kits lack. However, either of the kits is a good buy for anyone who wants to find out, without investing too much money, just what the short-waves have to offer that might be of interest to him. END

---DR. DX TAKES A SHOT AT SERIOUS WRITING---
A SIDE-BY-SIDE RECEIVER COMPARISON: THE JAPAN RADIO NRD-525 vs THE KNIGHT KIT OCEAN HOPPER

Recently at one of the infamous Old Dominion DX Association "all-nighters," I had the opportunity to perform a side-by-side comparison test of a new Japan Radio NRD-525 and an Allied Radio Knight Kit Ocean Hopper 740. It was not quite a fair comparison, I suppose, since the NRD-525 was the standard off-the-shelf model, while my Ocean Hopper was the deluxe model with the optional cloth-covered wooden case with "a hinged door in the top for easy plug-in coil replacement". Nonetheless, it seemed like a good time for a comparison test, so one was conducted. The first thing that struck me was the large size and weight of the 525--the Ocean Hopper was definitely more compact. The 525 had a plastic handle for carrying, whereas the vent hole in the back of the optional wooden case provided an easy grip on the Ocean Hopper. I switched on the 525 and started to leave to make a cup of coffee; but suddenly there was music coming from a speaker *inside* the case somewhere, and I had not even reached the stove yet! On the other hand, there is always plenty of time to get a cup of coffee before the Ocean Hopper warms up and is ready to start DXing; and as an added benefit, there is no speaker to annoy others while you sip your coffee and go about the business of DXing. It is obvious that the manufacturer of the 525 desires to get you DXing quickly, and allows you to do so from across the room somewhere if you want. The Knight folks, I guess, better understand the nature of the hobby and elected not to rush you into it but allow you time to get ready. A quick look at the fronts of the radios tells quite a story. The 525 people get you started quickly, then make you fiddle with a lot of knobs and junk. There are enough pushbuttons, knobs, and dials to make a bushel of Ocean Hoppers with enough left over for two Space Spanners and a Star Roamer. Only four simple knobs greet the Ocean Hopper owner, and a quick turn of each instantly tells you its function--no complicated instruction manual needed here (I never did figure out what about half the doodads were on the 525. One even dimmed the dial light--yes, a *dial light*!). Inside, the story was just as telling. The 525 was a mass of parts (probably most dealing with dial light dimming) while the Ocean Hopper had only a handful of easily reached and replaceable parts--and rugged parts at that, what with 600 volt capacitors vs 20 volt caps in the 525. And worst of all, there was no warm glow inside the cabinet of the 525. The Ocean Hopper not only glowed but radiated a gentle heat, telling you that it was hard at work for you, making your hobby relaxing and enjoyable. I could go on, but I guess I said it earlier: it is not a fair comparison. Guess which one I used for DXing that night.



TESTING OF PRE 1925 BATTERY TYPE TUBES

By Lane S. Upton
P.O. Box 875
Pine Grove, CA 95665

The following data will allow testing of the older "battery" type tubes on Hickok #530 and #600 series tube testers. Due to the fact that most of these tubes have not had voltages applied for many years, the tubes should be allowed to operate for up to 30 minutes in the tube checker before any conclusions are reached as to their condition, especially when the meter indication is erratic. If after this time there is no improvement, there is still the possibility of rejuvenation - see the CHRS Journal, July 1976.

Adaptors can be easily constructed for testing the tubes that do not have the standard UX (long) pins. It should be noted that all test set-up data is based on using the 4 pin socket connected with the standard 201A pin configuration. The filament wires should be #16 and every effort made to assure that full filament voltage is at the tube pins, especially with the 1 ampere filaments. If full rated filament voltage is not attained, the LINE ADJUST can be raised to correct.

TUBE TYPE	FIL.	SELECTORS	BIAS	ENG.	PRESS	MUT. COND.	NOTATIONS
WD-11 WX-12	1.1	JR-3200-Ø	57	73	P4	430	
V-99 X-99	3.Ø	JR-3200-Ø	57	73	P4	425	OK above 270
112	5.Ø	JR-3200-Ø	45	68	P4	1650	
12Ø	3.Ø	JR-3200-Ø	71	73	P4	525	OK above 325
2ØØ/A	5.Ø	JR-3200-Ø	33	28	P4	665	
2Ø1/A	5.Ø	JR-3200-Ø	48	32	P4	725	
24Ø	5.Ø	JR-3200-Ø	32	73	P4	2ØØ	OK above 125
WESTERN ELECTRIC TYPES:							
2Ø5	5.Ø	JR-3200-Ø	34	65	P4	145Ø	Also VT-2
215	1.1	JR-3200-Ø	57	73	P4	43Ø	Also VT-5
216	6.Ø	JR-3200-Ø	55	53	P4	1ØØØ	Note FIL.
264	1.5	JR-3200-Ø	49	13	P4	58Ø	

SUPPLEMENTARY DATA
WESTERN ELECTRIC TUBES
HICKOK #530 & #600 SERIES

TUBE TYPE	FIL.	SELECTORS	BIAS	ENG.	PRESS	MUT. COND.	REMARKS
101D	4.3	JR-3200-0	55	53	P4	1100	
101F-M	4.3	JR-3200-0	53	53	P4	1100	
102D	2.0	JR-3200-0	25	0	P4	500	
102F	2.0	JR-3200-0	25	12	P4	580	
104D	4.3	JR-3200-0	75	53	P4	1100	
CK-108	6.3	JR-0235-4	21	58	P4	1225	CAP = G
CK-113	50.0	JR-5347-6	48	71	P4	1800	
205D-F	5.0	JR-3200-0	34	65	P4	1450	Also VT-2
215	1.1	JR-3200-0	57	73	P4	430	Also VT-5
216	6.0	JR-3200-0	55	53	P4	1000	Note FIL.
231D	3.0	JR-3200-0	49	6	P4	540	
244A	2.0	JR-3204-0	42	42	P4	900	
245A	2.0	JR-0234-0	55	29	P4	725	CAP = G
247A	2.0	JR-3204-0	33	14	P4	920	
TS-251	50.0	JR-5347-6	50	70	P4	1800	Pent. Sect.
TS-251	50.0	JR-0602-3	0	50	P3 *	----	Rect. Sect.
257A	3.0	JR-0200-0	49	6	P4	540	CAP = G
259A,B	2.0	JR-0234-0	33	48	P4	1100	CAP = G
262A,B	10.0	JR-0203-0	31	49	P4	1000	CAP = G
264B	1.5	JR-3200-0	49	13	P4	580	
264C	1.5	JR-3200-0	54	12	P4	580	

WESTERN ELECTRIC TUBES

TUBE TYPE	FIL.	SELECTORS	BIAS	ENG.	PRESS	MUT. COND.	REMARKS
271A	5.0	JR-3204-0	32	81	P4	2900	
272A	10.0	JR-3204-0	51	38	P4	950	
274A	5.0	JR-0200-0	0	20	P3 *	----	Plate No.1
274A	5.0	JR-0300-0	0	20	P3 *	----	Plate No.2
274B	5.0	HR-0600-0	0	20	P3 *	----	Plate No.1
274B	5.0	HR-0400-0	0	20	P3 *	----	Plate No.2
275A	5.0	JR-3200-0	68	79	P4	2700	
283A	2.0	JR-0234-0	28	56	P4	1200	CAP = G
285A	2.0	JR-0230-4	40	42	P4	900	CAP = G
300A,B	5.0	JR-3200-0	60	87	P4	4600	
307A	5.0	JR-3020-4	32	78	P4	2500	CAP = P
309A	10.0	JR-0234-0	31	42	P4	900	CAP = G
310A,B	10.0	JR-0235-4	26	57	P4	1200	CAP = G
311A	10.0	JR-0234-0	38	77	P4	2400	CAP = G
313C	----	AP-0201-8	0	83	P5 *	----	
313CA	----	AP-8201-0	0	80	P5 *	----	
328A	7.5	JR-0235-4	16	69	P4	1750	CAP = G
329A	7.5	JR-0234-0	38	78	P4	2450	CAP = G
336A	10.0	JR-4235-0	24	82	P4	3100	
337A	10.0	JR-0235-4	30	49	P4	1700	CAP = G
339A	5.0	JR-3024-0	0	82	P4	3200	CAP = P
348A	6.3	JR-0347-5	13	70	P4	1800	CAP = G
349A	6.3	JR-5347-0	17	86	P4	4000	

WESTERN ELECTRIC TUBES

TUBE TYPE	FIL.	SELECTORS	BIAS	ENG.	PRESS	MUT. COND.	REMARKS
350A	6.3	JR-3024-0	15	90	P4	6400	CAP = P
350B	6.3	JR-5347-0	25	90	P4	6250	
351A	6.3	JR-0507-2	0	50	P3 *	----	Plate No.1
351A	6.3	JR-0307-2	0	50	P3 *	----	Plate No.2
352A	10.0	JR-0205-0	36	24	P4	650	CAP = G
352A	10.0	JR-0405-0	0	21	P1 *	----	Diode No.1
352A	10.0	JR-0305-0	0	22	P1 *	----	Diode No.2
367A	6.3	JV-6147-0	24	90	P4	6000	
373A	2.0	JR-4760-3	13	48	P4	1000	
374A	3.0	JR-4760-3	38	79	P4	2700	
375A	20.0	JR-5347-0	53	84	P4	3700	
381A	6.3	HR-0502-0	0	60	P1 *	----	
383A	6.3	HR-4602-0	28	73	P4	2000	
385A	6.3	HR-5032-8	10	78	P4	2500	CAP = P
387A	6.3	HR-5032-8	20	73	P4	2000	CAP = P
393A	2.5	JR-4000-0	# Strikes at about 28	0	P2	----	CAP = P
398A	6.3	JR-4760-3	37	87	P4	5300	Also #5603
400A	1.1	DX-6218-5	35	0	P4	500	Pent. Sect. Short On 2
400A	1.1	DX-8216-5	35	0	P4	500	Osc. Sect. Short On 2
401A	6.3	JR-3567-0	30	73	P4	2000	Also #5590
403A	6.3	JR-3562-0	24	65	P4	1500	
407A	20.0	KV-7608-2	13	88	P4	5300	Triode No.1
407A	20.0	BV-3402-8	13	88	P4	5300	Triode No.2

WESTERN ELECTRIC TUBES

TUBE TYPE	FIL.	SELECTORS	BIAS	ENG.	PRESS	MUT. COND.	REMARKS
408A	20.0	JR-3562-0	24	65	P4	1500	
409A	6.3	JR-3562-7	14	70	P4	1750	
412A	6.3	EV-0907-3	0	65	P3 *	----	Plate No.1
412A	6.3	EV-0103-7	0	65	P3 *	----	Plate No.2
420	2.5	JR-0300-0	0	70	P3 *	----	Plate No.1
420	2.5	JR-0200-0	0	70	P3 *	----	Plate No.2
420A	12.6	EV-6807-3	0	48	P4	1000	Triode No.1
420A	12.6	EV-3102-6	0	48	P4	1000	Triode No.2
421A	6.3	JX-4506-1	56	92	P4	8000	Triode No.1
421A	6.3	JX-2103-5	56	92	P4	8000	Triode No.2
422A	5.0	HR-0600-0	0	68	P3 *	----	Plate No.1
422A	5.0	HR-0400-0	0	68	P3 *	----	Plate No.2

END

WANTED: ♦ Columbia AT upper works except bedplate, mandrel & shaft, drive pulley and gear.

♦ Triumph, model B case, cover and speed control yoke.

♦ Amberola BI complete mechanism.

♦ Credenza 12" brown record folders, E & H. Must be in very good condition.

♦ HiFi tube amps and preamps from 50s and 60s, mono or stereo. Have possible trades.

SALE OR TRADE:

♦ Credenza 10-50, electric TT. Mechanically very good. Case needs work. $250 or ?

♦ Zenith 12-H-650 large chairside radio. Very attractive. Original grill cloth. Refinished case. Electrically restored. $225 or ? Alan Hibsch, 4 LaForet Court, Oroville, Ca 95966 ##

FEDERAL BOOK FOR SALE: The complete story of federal radios made by Federal Telephone and Telegraph from 1921 to 1929. Over 60 illustrations including all early Federal radios and most R.F. and audio amplifiers and parts. A full page is devoted to each early set. The article and speech by the expert, Dick Schamberger, are include. The Federal radio station, WGR, first in Buffalo, is described. All federal models are listed with the year and month introduced, their cost new, and a description. Two pages of references where you can find more information are included. This is a 64 page booklet with good quality printing. Please send $4.95 and $1.25 S & H to Larry Babcock, 8095 Centre Lane, East Amherst, N.Y. 14051. ##

FOR SURPLUS HOUNDS

By Bart Lee, xWPE2DLT
327 Filbert Steps
San Francisco, CA 94133
(415) 788 4072

Correspondence is invited

SPY RADIOS:

Old spooks, Old Crows, and surplus hounds with special tastes got to see spy radios of the Second World War at the San Francisco Presidio Officers' Club on June 4, 1994. The Association of Former Intelligence Officers commemorated D-Day at the Officers' Club with a day long program and a display of WW II spy radios (and some of later vintage). A real German Enigma encoding machine also shared the limelight. Photos are nearby of the Enigma and some of the radios. The radios came from the collection of the President of the Association. Many other spy radios used by the CIA's predecessor, the OSS, appeared on a bulletin-board display of illustrations from a recent book, SPECIAL EQUIPMENT OF THE OSS.

"OSS" stood for Office of Strategic Services; it was run by General "Wild Bill" Donovan and its logo appears nearby. The OSS worked wonders where other Generals let it: China-Burma-India and in Europe and North Africa. Everything it did by way of intelligence and operations required command, control and communications by radio. Anyone interested in spy radios will like Gary Cain's video reproduction of the three-reel instruction film on the OSS radio the SSTR-1, a spy transceiver from about 1944. The video is very good, and Gary will be happy to send it to you for $25: 1775 Grand Avenue #302, St. Paul, MN 55105, phone (612) 698 4851. Incidentally, Gary has long been looking for the later RS-6 spy radio (a set that appeared at the spook convention); a page from his want-list with a good illustration of the RT-6A and the RR-6A appears nearby. Henry Engstrom of CHRS from time to time comes across such equipment.

Real spies and covert operatives sometimes had to homebrew their own radios, because the late 1930s design commercial gear and early GI (Government Issue) sets didn't work as well as they had to. This was even true, in its earliest operations, for the OSS:

"A radio was desperately needed that would feed back across the miles [because] the Burma mountains stood in between. The communications section was under the command of Lt. Phillip S. "Gob" Huston. In particular, Sgt. Alan Righter was hard at work on this project. His instructions were to make a receiver and transmitter small enough to be carried but powerful enough to do the job. Also at work

with him were Sgts. Don Eng and Fima Haimson. The sets were built from scratch and hunger. The commercial sets they had brought with them from America didn't work. The monsoons flooded them out. Also, they operated from a.c. current which was unavailable in the jungle. Fortunately, among the supplies, were many components such as resistors, and capacitors and a lot of wire. To get the transmitters working the men had to take the transformers apart and rewire them. [OSS Detachment 101 Commander] Eifler's instructions indicated the transmitter and receiver had to be both small and not in excess of forty pounds complete with batteries. The men scrounged around trying to find components. Nothing would work....

"After three or four weeks of improving on the design, they came up with a transmitter that had a single tube. It had a 'home brew' receiver that contained three tubes. They couldn't standardize on the transmitter or receiver because when they ran out of one type of tube they would have to use another. In Calcutta they found enough commercial parts to set up a small assembly line. The equipment they started with was built on aluminum chassis that were actually the belly skins of C-47s that had crashed at Dinjan Airport. They fabricated their own variable capacitors out of C-ration cans. The resistors proved to be a real problem. Finally they took some flashlight cells and removed the carbon rods to make their own resistors. When the first set was completed, it was taken one hundred miles away to be tested. It worked fine. The transmitter and receiver weighed eight to ten pounds apiece. The battery took up the rest, but it was all within the forty pound limit. Before taking it to Burma, one final test was made. Don Eng went to lower India, a distance of about two thousand miles. From Mysore a regular schedule was maintained. [Commander] Eifler's request had become a reality. Eventually there were seventy-two of these sets working all over Burma. They were crystal controlled, and the men had to find calibration crystals to get day and night operation out of them. They got them from old Signal Corps equipment. The crystal was on 3,500 kc., and daytime doubled the frequency. The antenna was a piece of insulated wire thrown over the limbs of a tree or bush. The lower the aerial, the better the distance."

Quoted from Tom Moon, THIS GRIM AND SAVAGE GAME: *OSS and the Beginning of U.S. Covert Operations in World War II* (Burning Gate Press, Los Angeles, 1991) at 88-89.

If I were designing this set, I would want a regenerative detector isolated from the antenna by at least one and possibly two stages of radio frequency amplification. Otherwise, letting the detector slip into regenerative oscillation would broadcast my position to any enemy intercept operator within miles. WW II shipboard receiving equipment was built with this isolation and suppression concept in mind, to avoid detection by direction-finding submarines. Similarly, I would want a transmitting oscillator circuit that minimised harmonics and parasitics. I suspect the designers of this equipment were deeply concerned with these problems, because their own lives could be at stake in operating these sets. I also suspect that the 1941 ARRL handbook

probably provided the basic circuits, if only from memory.

On the Western Front, operating behind Nazi lines, the OSS finally beat the very adept German signals intercept service and its extremely accurate direction finders, with a startling innovation. Instead of sending intelligence information back to Allied bases in England, in the fall of 1944 the OSS invented a radio to send it straight up, in a narrow VHF beam. This equipment was code named Joan-Eleanor, or "J-E." This battery operated equipment weighed but four pounds, batteries and all. The British put special J-E receivers into three high-altitude modified "Mosquito" fighter-bombers, and flew them at 30,000 feet above the covert teams to receive the transmissions. Some of the teams never did transmit, possibly because the equipment did not survive when it hit the ground from the team's air-drop. Tom Moon also tells this story in his GRIM AND SAVAGE GAME, at 252-53. This is satellite uplink, without the satellites having been invented yet. Today's spies no doubt just point a spread-spectrum data burst at a place in the sky where some MILSTAR-like satellite hangs out, but the principle is the same.

ARR-1, ARR-2 REVISITED:

The ARR-1 and ARR-2 descriptions in this column have given rise to some comment from Lud Sibley of the Antique Wireless Association, set forth in the sidebar. As one can imagine, alignment and testing of the then-novel subcarrier required special equipment. A signal generator had to put out the VHF carrier at various frequencies over 200 mHz, then modulate it with a subcarrier on various frequencies between 540 kHz and 830 kHz. Photos of that signal generator appear nearby, the "TS-24A/ARR-2 portable test oscillator."

Battery powered, this signal generator also employed acorn tubes at the VHF frequencies, and a cavity resonator. See the nearby photos for the interior layout, including the resonator in the back, under the acorn tube. Note also the calibration curve on the inside cover, for the subcarrier frequency, called the IF. Lud sends along a description of the first subcarrier use in the Navy. It employed the "ZB" converter for the "RU" receiver in naval aircraft (the nomenclature evolved to ARR-1 later). The "YE" Aircraft Homing System provided a homing beacon for aircraft carriers, as the very top antenna on the bridge. Planes flew directly in on the beam, and this made a difference in at least one major battle in the Pacific.

After successful use on aircraft carriers, the beach landing system evolved in 1942, with a beacon whose nomenclature was "YN." This beacon, along with a split signal of Morse "A" (.-) and Morse "N" (-.) from a shipboard operator, led the landing craft in. Use of the subcarrier feature permitted as many as 30 beacons at once. It is a likely speculation that the subcarrier system provided beacons for beach landings such as that at Normandy. The first men on the beach set up the beacon, set to the subcarrier frequency for that location at the landing site. Then the ARR-1 connected to a broadcast band receiver, or the ARR-2 alone, with loop antennas, provided directional bearings for the landing craft assigned to each site. This system is set forth in detail, with illustrations, in Louis A. Gebhard, EVOLUTION OF NAVAL RADIO-ELECTRONICS AND CONTRIBUTIONS OF THE NAVAL RESEARCH LABORATORY, (Naval Research Laboratory, Washington, DC, 1979) at 271 ff (courtesy of Lud Sibley).

Subcarrier modulation first appeared in the late 1920s in the laboratories of John

Continued page 26

ARR-1, ARR-2

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Flemington, NJ 08822-1224
(908) 782-4894

I've just seen "Little Acorns" story in the CHRS Journal. Good stuff. Some supplementary thoughts come to mind.

The other guys got acorn tubes, too. I recently inspected the schematic of a Japanese VHF radar from fairly late in the war - Type 140, if I remember right. Its front end used four "UN" - 954 acorn tubes. I've seen new-in-the-box UN-954s of that vintage made by Hitachi. The British got manufacturing information on them, too; used some in VHF radars, but had great trouble making them in quantity and officially gave them up for new equipment circa 1940.

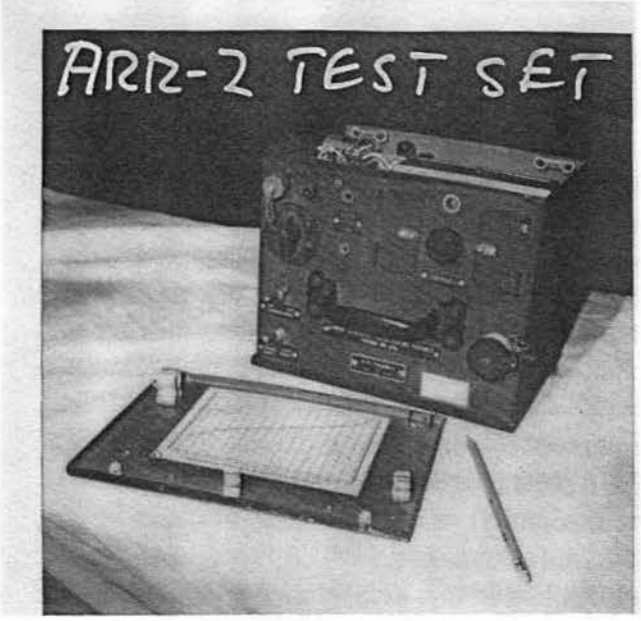
On the ZB homing adapter: the series contained at least ZB-1 through ZB-4 before the device was redesignated R-1/ARR-1. The early ones used some weird early-style coax fittings for the antenna and output; the later ones, the usual SO-239 "UHF" connector. If you inspect a later RU-series receiver or an ARB, you'll see on top the two studs that held the ZB. I believe that the main reason for inclusion of a broadcast band receiver in the Navy's AN/ARC-5 system was for compatibility with the ZB/ARR-1 ... until the AN/ARR-2 was developed to fit the same mounting racks. The enclosed pages from the Naval Electronics Lab official history contain some good detail, if vague, about the ZB.

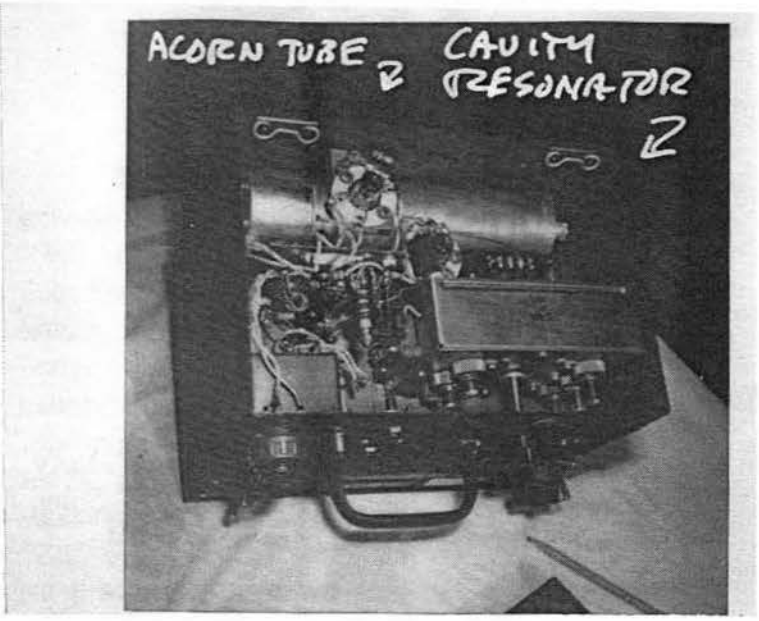
The old-time story about the double modulation system being "secure" is more or less radio-amateur myth - you read it in the old articles in CQ, et al., but that's it. In this simple AM-on-Am system, a competent intercept operator tuned to the carrier would hear nothing, all right; but tuning down or up 700 kHz would bring in the two sidebands of the "secret" modulation with their information signal. If the intercept operator had a panoramic adapter, he'd see a unique head-and-shoulders pattern immediately: a carrier set between two weaker sidebands. The Japanese were competent in this area; they developed a 200 mHz airborne search receiver to detect signals from the SD air-warning radar on U.S. submarines, and sank a few with it. The only security that the ZB scheme offered was that it was basically line-of-sight,; an aircraft carrier could bring its planes home without breaking radio silence on HF.

The R-1/ARR-1 could be honored as being the first receiver designated under the ten-new "AN" nomenclature. (Of course, there was a foul-up: it was a converter rather than a complete receiver, and should have been "CV-1/ARR-1" or some such. So it goes.)

On the ARR-2: the photo shows what appears to be an interesting variant (R-4X?) with a remote channel-change motor (?) and extra connector. Anyhow, I enjoyed your story! s/ Lud. ##

R4R, channel change Motor



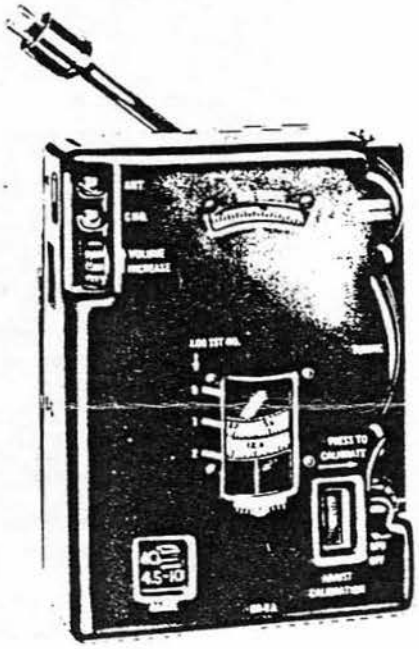


Gary P. Cain
1775 Grand Avenue #302
St. Paul, MN 55105
612/698-4851

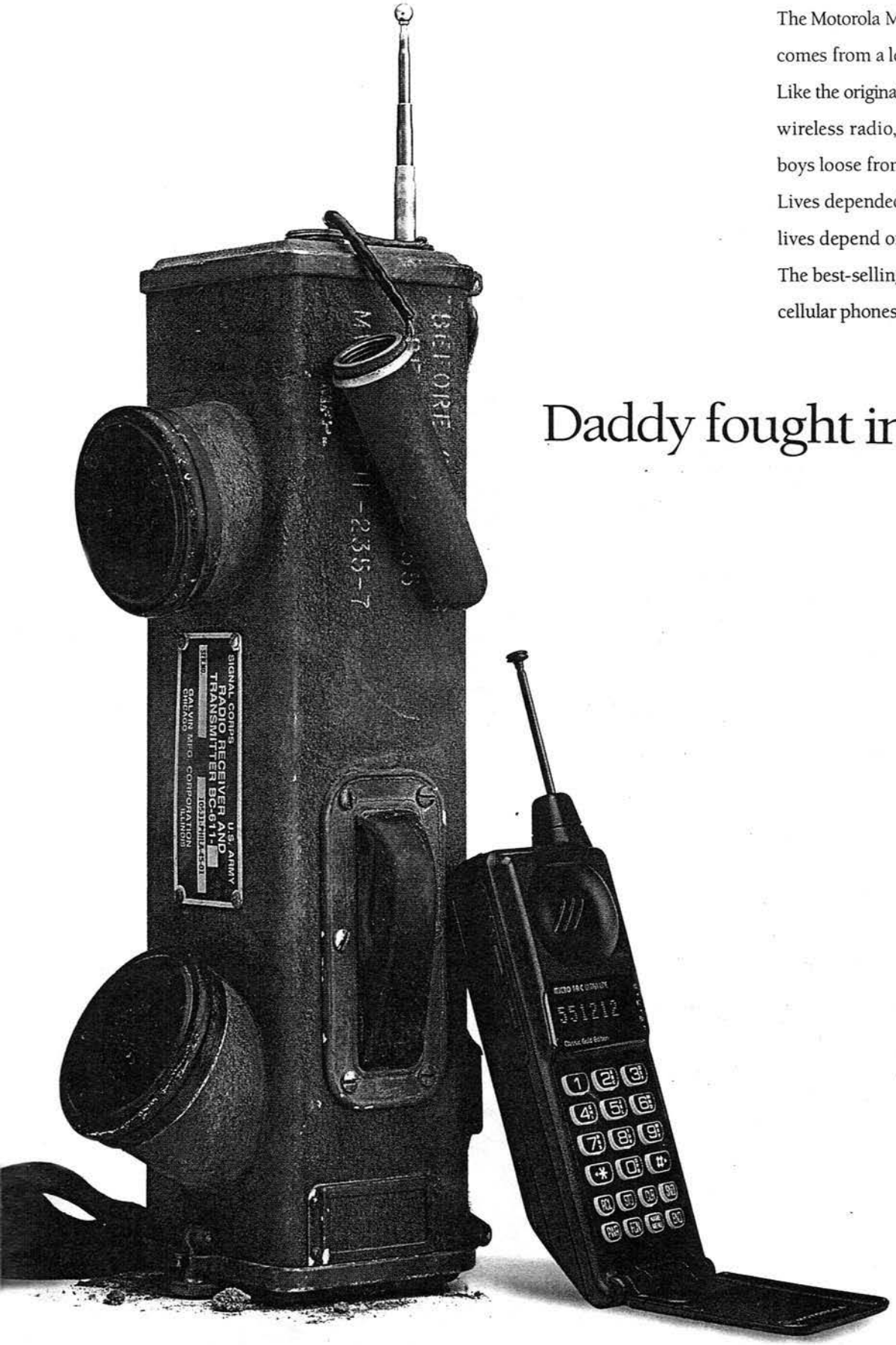
WANTED!

RT-6

TRANSMITTER RT-6A



RECEIVER RR-6A



The Motorola MicroTAC Ultra Lite™ comes from a long line of heroes. Like the original SCR 536 hand-held wireless radio, which cut our boys loose from the wires of war. Lives depended on us then. Busy lives depend on us now. Motorola. The best-selling, most-preferred cellular phones in the world.

Daddy fought in the war.

MOTOROLA

CHRS is happy to see a 1944 BC-611 in a 1994 MOTOROLA Ad!

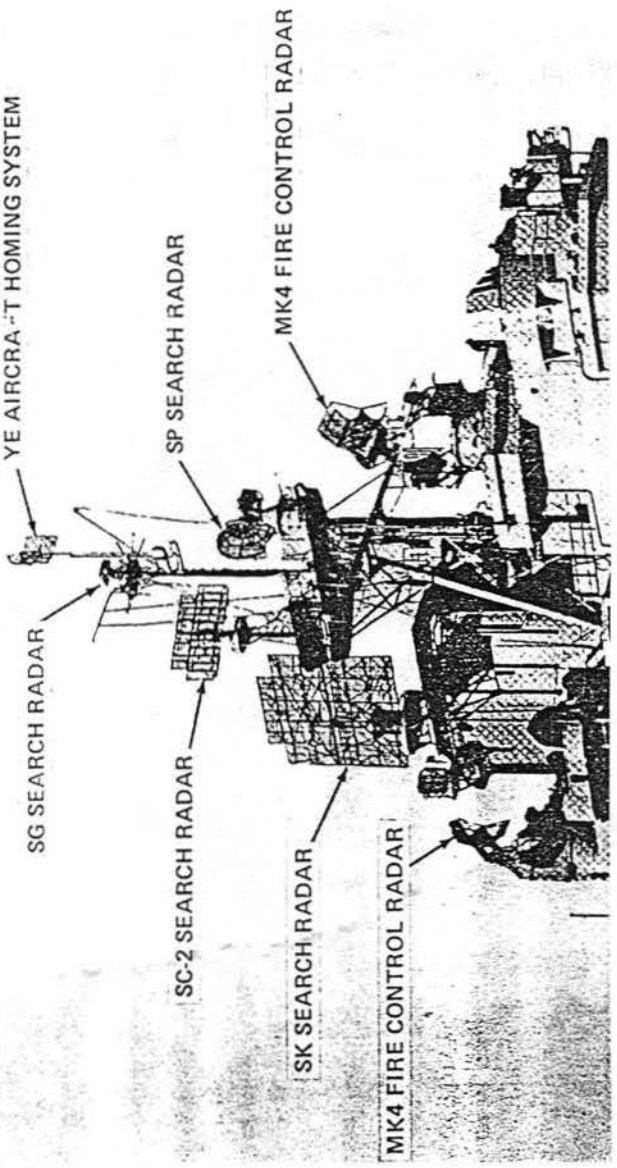
15

Hays Hammond, Jr. in New York. He claimed the invention. Benjamin Meissner, who worked with Hammond, later claimed to have first discovered the technique, and made a persuasive claim to priority in the invention. Incidentally, both men were founding members of the Institute of Radio Engineers (along with the likes of Lee de Forest and David Sarnoff). Hammond was number 63 and Meissner number 70.

1945 PEACE DIVIDEND -- THE BIRTH OF SURPLUS:

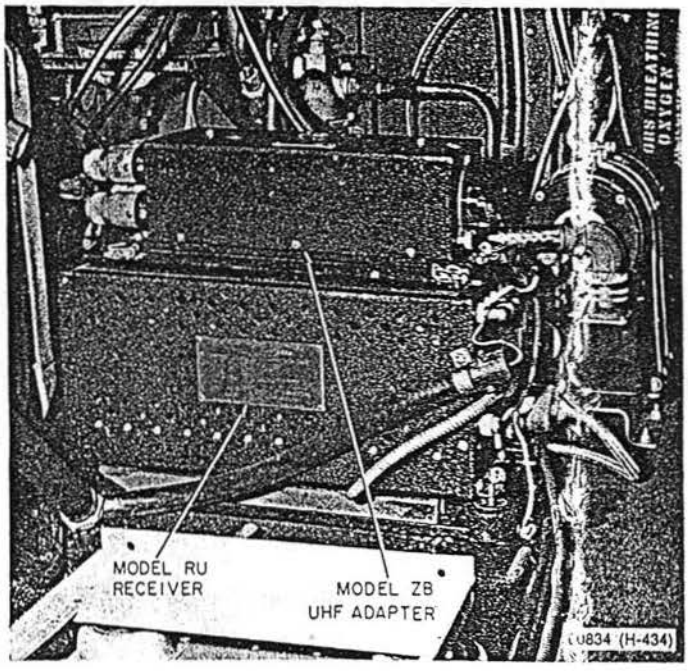
As we approach the fiftieth anniversary of the end of the Second World War, we approach the fiftieth anniversary of the availability of war surplus electronics. The end of the War was perhaps more important in the great scheme of things, but all that great gear was surely one of the blessings of peace! This column is interested in your military gear and surplus experiences. Please write, and send photos.

If anybody needs schematics of WW II gear, or conversion information, I have almost all of the surplus books. I will be happy to copy-out anything I have. I am looking for the manuals on the RBA and RBC "battleship" radios. Is anyone operating these or any other radios of the era? Tell us about them, send us some pictures, write a note for this column... -73- Bart. ##

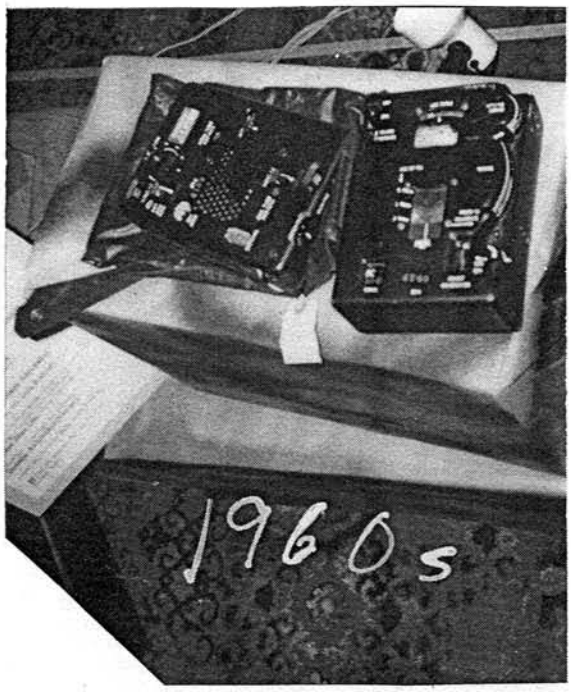


CARRIER INSTALLATION OF MODEL YE AIRCRAFT HOMING EQUIPMENT

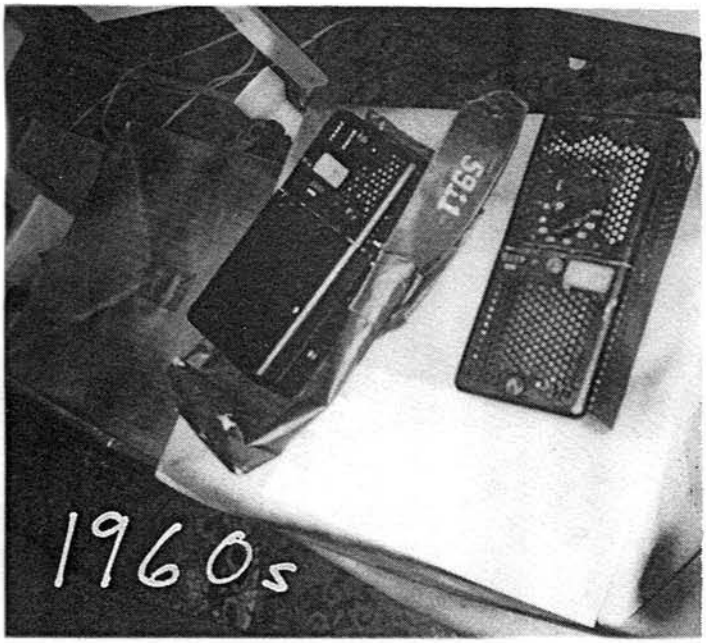
Among the many electronic equipments installed aboard carriers, the Model YE aircraft homing equipment was given top priority, in view of its importance to the safety of carrier aircraft and crews. The installation shown was aboard the USS MAKASSAR STRAIT, CVE-91.

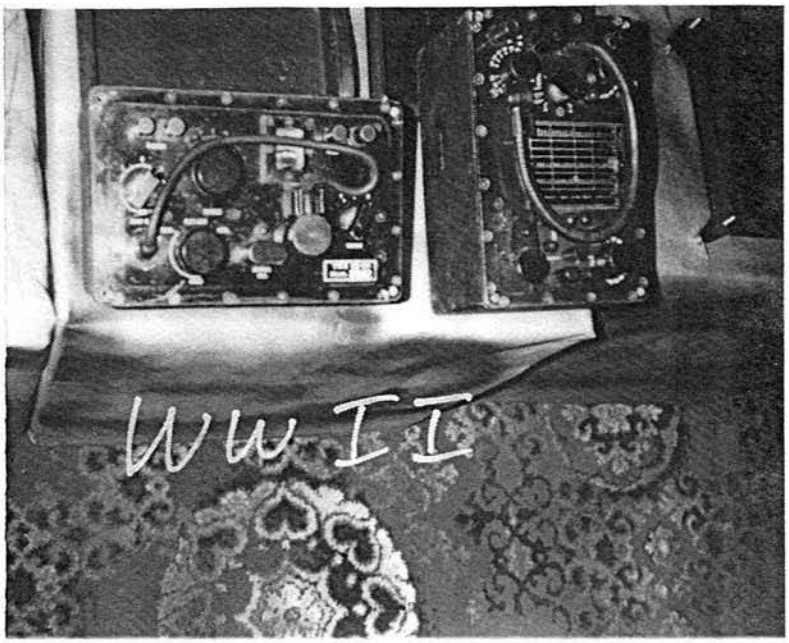


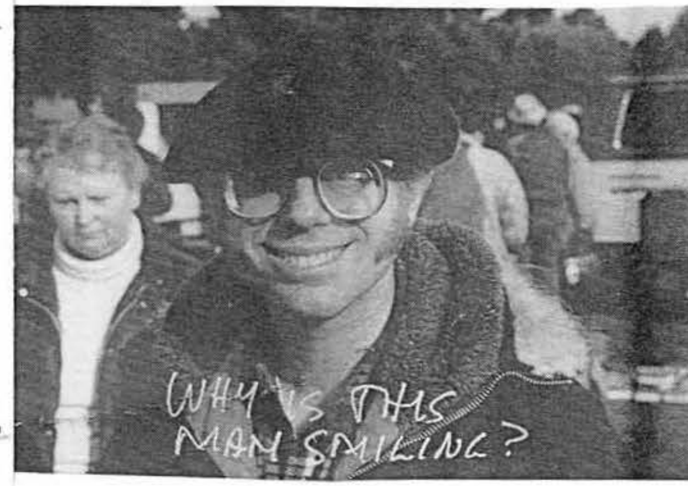
THE PRIMARY AIRCRAFT-TO-CARRIER RADIO HOMING SYSTEM USED BY ALL CARRIERS AND THEIR AIRCRAFT DURING WORLD WAR II
THE MODELS YE-ZB

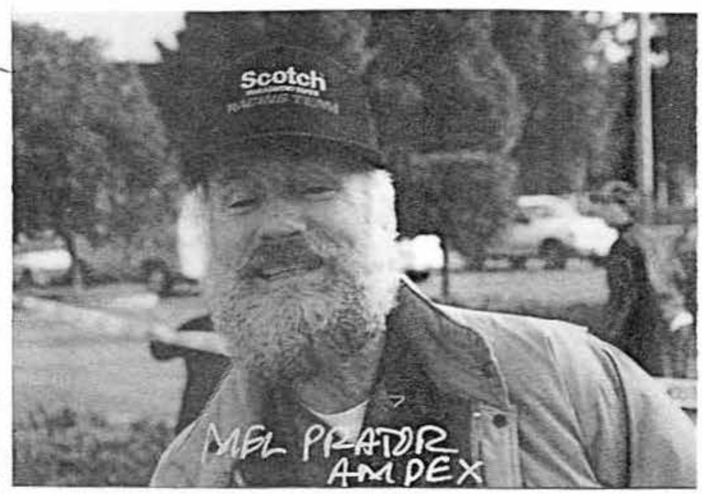


SPY RADIOS!









SWAP MEET PHOTOS BY GEORGE DURFEY

Book Review

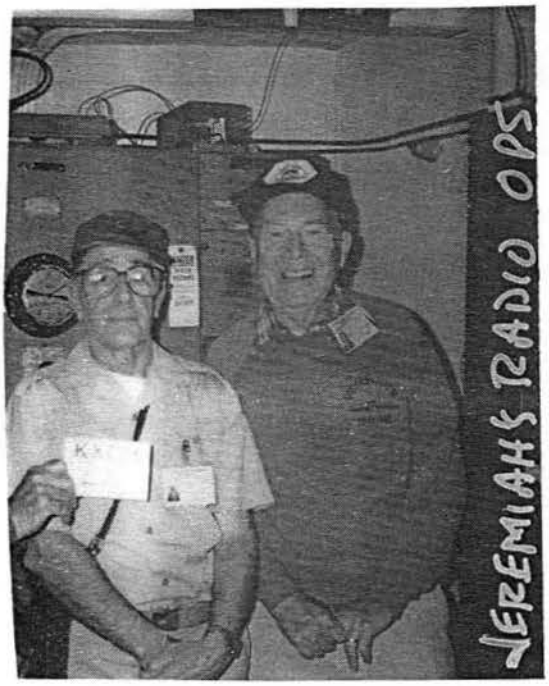
Poster's Radio & Television Price Guide

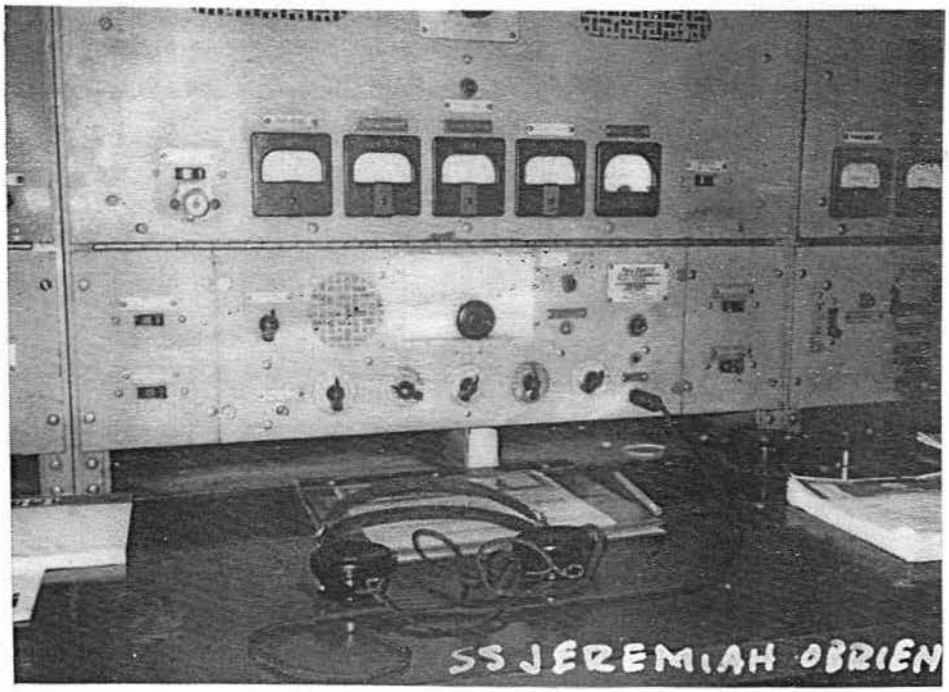
Review By: Paul Joseph Bourbin

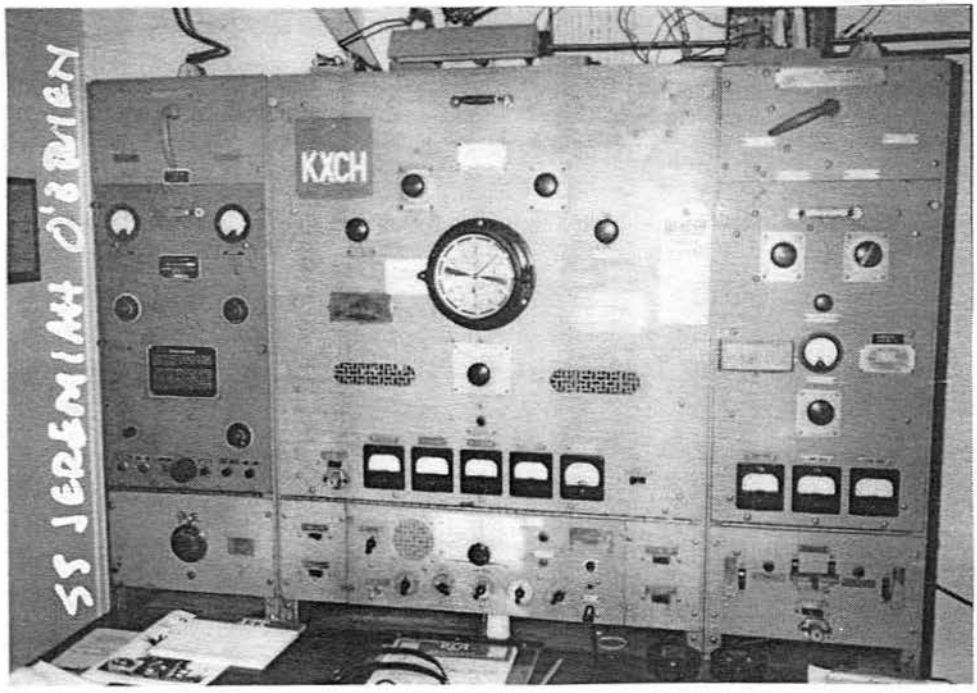
Poster's Radio & Television Price Guide, Second Edition, 1920-1990. By Harry Poster. Published by Wallace-Homestead Book Company, (a division of Chilton), Radnor, Pennsylvania. 1994. 187 pages + index. Softcover. $17.95.

This much expanded and improved edition of Harry Poster's earlier work attempts to cover all of the areas of interest to vintage radio and television collectors save for communication receivers. The book is divided into three sections: Tube Radios, Transistor Radios, and Video Television. There is also an appendix listing many of the nation's vintage radio clubs. Each section starts with a brief history and explanation of what makes a certain object collectible (and valuable) and another one not. This is followed by an alphabetical listing, by company and an alpha-numeric listing by model within each company. There are moderately good monochrome photographs on most pages along with reprints of various companies' advertising literature. In the center of the book, there are eight color plates depicting radios and televisions mentioned elsewhere in the book. While the plats are well photographed, the layout is rather poor, making the plates more utilitarian than artistic in nature. As to the usefulness and quality of the book: the reviewer has mixed feelings. On the downside: many companies that would be of interest to collectors are barely listed or left completely out. For instance, E. H. Scott, McMurdo Silver and Lincoln radios are not mentioned (although Scott TV sets are listed). Considering Mr. Poster's penchant for stylish and Art Deco sets, one has to wonder why he left these nickel and chrome plated classics out,. These sets are fairly valuable, quite collectible and of the type for which both beginning and advanced collectors could use price information. Often, with companies that are mentioned, historically significant and collectible radios are not mentioned. For instance, most of the Radiola series, the entire R-32, RE-45, etc. series, and the PR-10 are absent from the listing. No AC Magnavox radios are mentioned. While the reviewer realizes that no list can be comprehensive, if a person undertakes the responsibility of publishing a price guide, he should have most of the sets with broad collector interests listed. The sets that a collector, especially the neophyte, are likely to find should be listed. The same holds true for the transistor and television selections, for Singer and Hoffman respectively are not listed. The reviewer was disappointed to find few of his transistor radios listed. Does that mean that they are 1) undesirable; 2) overlooked by the author, or 3) rare and unknown? There is no way to tell. On the other side: The prices for most radios, tube and transistor, seem quite fair and reasonable. In fact, the television prices seem to be on the low side. This is a refreshing change from some of the other price guides around that seem to inflate prices for whatever reason. This books is a good one to have when you want to show a seller what the mysterious "they" are paying for a set. If your set is listed, the information you will find is useful and accurate. For television collectors (and their numbers are growing rapidly) this is about the only game in town. Hopefully Mr. Poster will continue to update and improve his price guide. It is an improvement over his previous effort. ##

CHRS at Sea, part II: As the *S.S. Jeremiah O'Brien* steamed to Normandy's beaches again and steams its way back, for the fiftieth anniversary of D-Day, we can recall the role radio played in coordination and communications for the war effort. Nearby are photos of the *Jeremiah*, its shoreside radio operators, including in the middle one of the Secondari brothers, Elliot and Richard (they are twins), and Alex Newbold (R). The main RCA RadioMarine Model 4U transmitter ET-8024A (long wave) is shown nearby, with a close up of the RCA AR-8510 long wave receiver and operator's position. On the present voyage, the *Jeremiah* comes up on 14.300 mHz, 21.412 mHz and 7.233 mHz depending on propagation, with a Monday, Wednesday and Friday morning (SF time) sked. The ham call stateside is W6PW, so the *Jeremiah* may operate as W6PW/MM [Maritime Mobile]. The frequency of 14.300 mHz is the Maritime Mobile net frequency, often very active. [BL]##







RESTORATION CORNER

By Bart Lee, xWPE2DLT
327 Filbert Steps
San Francisco, CA 94133
(415) 788 4072

When you've stripped and sanded that radio down to bare, thirsty wood, wood that has needed help for maybe sixty years, several alternatives present themselves. It is possible to recreate that French polish finish, but it is an heroic endeavor. Polyurethane is available by the gallon, but it is a sin. A middle course is, however, readily at hand. There is a bottled wood stain with a dab-on applicator sold under the brand name E-Z Scratch Remover. It is a penetrating, red-brown stain, nearly cherry. Unlike pigment stains, E-Z pervades the wood fibres (especially thirsty fibres), not only at the surface but to some depth. A bottle will do several radios. The result is deep patterns of grain and texture. On a good veneer, the wood glows with depth. This is not the reflective depth of high polish, but rather an inner depth as the stain variously highlights different wood fibre patterns of the grain. It is a most pleasing result, especially for a basket-case cabinet.

The two radios appearing nearby have had the benefit of this treatment. The Zenith chairside was deeply ringed from what I hope was many a happy highball imbibed while listening to the BBC. The console was the worst radio I've ever seen at a swapmeet; peeling veneer, waterstained, sunburned, warping and cracking. After sanding and steel-wooling to bare wood all around, I followed the E-Z stain with red-oil furniture polish. When the wood is old and dry, this does not leave an oil residue after serious soft, dry cloth buffing. Elbow grease will prevent a greasy-appearing surface. The result is the stain's glow sustained by the polish. Try it first on an old radio with nothing left to lose. You will be pleased.

Although polyurethane is generally a bad choice for restoration, it does have its uses. In the console pictured here, a Delco from 1937-38, the top was warped, cigarette-burned, ringed and desiccated. I took it down to bare wood, filled it, stained it, and then coated it with tinted polyurethane. This created a thick protective surface on the top of the console. Polyurethane can also be used underneath to counterwarp a bent wood piece. If I'd had a piece of beveled glass to fit the top, I might not have been tempted to use the polyurethane. The technique did work, however, and the top is nearly indestructible, and it looks good, too.

The knobs are also coated with polyurethane, on the theory that they get the most interaction and need the most protection. This radio, fully restored electronically as well, is working, albeit retro, house furniture. (I earned my Radio Yugoslavia QSL card on this radio in my living room, shortly before Yugoslavia discombobulated). If polyurethane coatings had been available to furniture makers in the thirties, I think they would not have hesitated to use them for protecting tops and other at-risk surfaces of wood radios. Go, likewise, and feel free to do the same.

For those of you interested in electronic restoration of 1930s and 1940s radios, there appears nearby a diagnostic chart. *Mechanix Illustrated* provided it in its RADIO MANUAL at the beginning of World War Two, a time when repair was the only option, no new sets being manufactured

because of the war. Today's restoration dilemma is capacitator replacement: all or only the bad ones. I replace them all, because it is only a matter of time until another paper cap goes. May as well do it all at once, and keep the radio going another forty years! If there's time enough, sure, put the new caps into the old paper cylinders. -73- Bart. ##

Leon Theremin

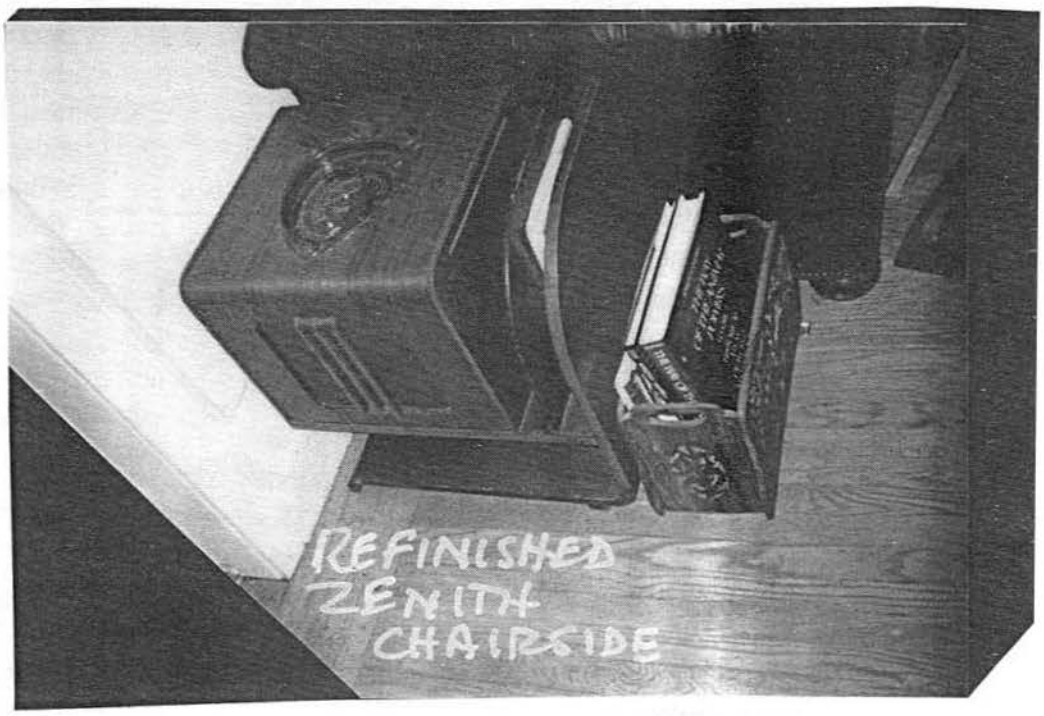
Moscow

Leon Theremin, the inventor of the electronic instrument that bears his name, died last Wednesday at the age of 97.

The theremin, one of the first electronic musical instruments, looks like a radio receiver with a vertical antenna on top and a horizontal metal loop on the side. It is played by moving the right hand in the air near the antenna. The pitch varies according to the hand's distance from the antenna. The volume is controlled by moving the left hand back and forth in front of the metal loop. In effect, the theremin was the first synthesizer.

Mr. Theremin invented the theremin in 1920, a year after becoming head of the laboratory of electrical oscillators in the Physico-Technical Institute in St. Petersburg. Initially, he called it the etherophone.

In 1927, he traveled to New York, where he gave "ether-wave" concerts. He was granted a U.S. patent on the instrument in 1928 under the name thereminvox. He sold the manufacturing rights to RCA, which sold about a thousand sets.

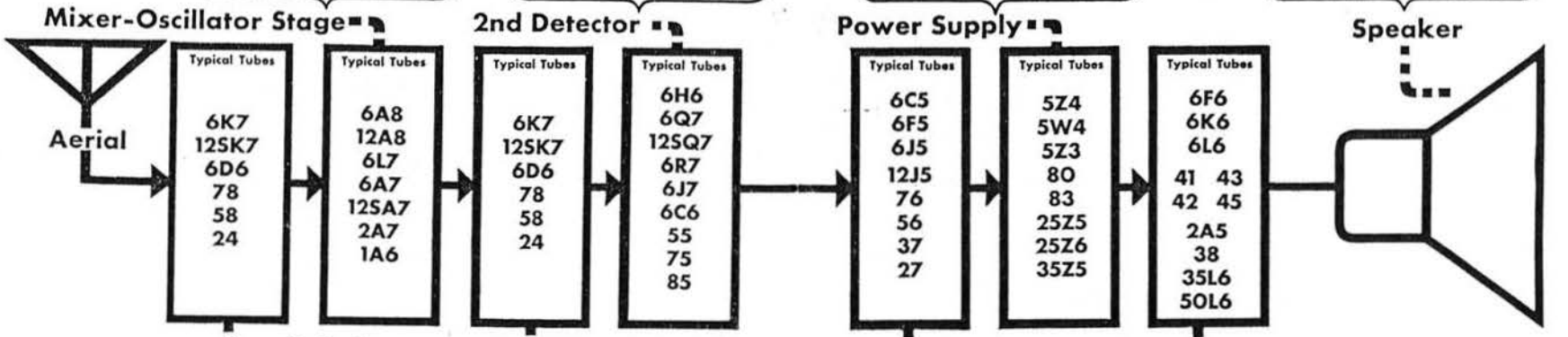


COMMON RADIO TROUBLES STAGE-BY-STAGE

With the growing scarcity of radio servicemen, you may find it necessary to trace down and cure the troubles in your own set. This handy "trouble-shooting" chart will help you do so.

The first move in tracing trouble is to have all tubes tested. *After* they have been eliminated as the possible cause of the trouble is the time to give thought to the parts in the receiver.

The common symptoms are listed at the left of the chart, and the probable difficulties for each individual stage listed to the right—each stage in the receiver being represented by a block in which is listed the tube types commonly associated with that stage.



SYMPTOMS

Inoperative

- Oscillator plate resistor open
- First I. F. transformer primary open
- Shorting or open oscillator trimmer condenser
- Open plate choke coil
- Plate load resistor open or shorted
- Shorted trimmer condenser
- Control grid lead shortening to shield
- Open plate filter choke
- Shorted electrolytic condenser in power supply
- Power supply filter choke open
- Open voltage divider in power supply
- Shorted or open power transformer secondary
- Open voice coil
- Secondary of output transformer open
- Voice coil leads open
- Voice coil leads shorted to pole piece

Intermittent Fading

- Poor insulation on oscillator trimmer condenser
- Open grid return resistor
- High resistance at lugs of oscillator coil
- Dirty band switch contacts
- Defective volume control
- Load resistor bypass condenser shorting
- High resistance contact in I. F. transformer secondary
- R. F. bypass condenser shorting
- Shorted or leaky filter condenser
- Loose contacts on voltage divider
- Defective line switch
- Filter choke shorting to ground
- Voice coil lugs making poor contact
- Metal filings grounding voice coil
- Secondary of output transformer opening
- Field coil connections making poor contact

Oscillation or Noisy

- Open grid coil
- Cathode bypass condenser open or leaky
- Shield on grid leads corroded or open
- Decoupling resistor shorted
- Open plate or grid bypass condenser
- Defective volume control
- Out of alignment
- Defective plate load resistor
- Open filter condenser
- Defective voltage divider
- Filter choke leaking to ground
- Leaky bypass condenser from rectifier tube to ground
- Metal filings grounded voice coil
- Warped cone
- Voice coil rubbing on pole piece
- Voice coil winding loose

Distortion or Hum

- Leaky plate bypass condenser
- Shorted or leaky cathode bypass condenser
- Open grid filter condenser
- Oscillator coil misaligned
- Defective volume control
- Leaky audio coupling resistor
- Plate load resistor too high
- Leaky plate bypass condenser
- Open or shorted primary bypass condenser
- Centertap on filament windings open
- Open or leaky output filter condenser
- Grounded pilot light bracket
- Field coil open or shorting
- Hum bucking coil shorted or reversed
- Voice coil rubbing on pole piece
- Unfiltered field supply

SYMPTOMS

Inoperative

- Open or shorted R.F. coil
- Band switch contacts dirty
- Shorted tuning or trimmer condenser
- Open plate decoupling resistor or choke
- Open I. F. coil
- Plate decoupling resistor open
- Shorted trimmer condenser
- Primary or secondary bypass condenser shorted
- Plate load resistor open
- Open audio coupling condenser
- Shorted plate bypass condenser
- Open cathode resistor
- Primary of output transformer open
- Open cathode bias resistor
- Shorted audio coupling condenser
- Secondary of output transformer shorted or open

Intermittent Fading

- Shorting trimmer condenser
- Loose connecting lugs on R.F. coil
- Leaky plate or screen bypass condenser
- Band switch making poor contact
- Open or shorting grid bypass condenser
- Litz wire on lugs corroded
- Trimmer condenser shorting
- A.V.C. network defective
- Defective audio transformer primary
- Open volume control
- Leaky grid or plate coupling condenser
- Defective plate load resistor
- Defective primary on output transformer
- Open cathode bias resistor
- Shorting audio coupling condenser
- Open secondary on input transformer

Oscillation or Noisy

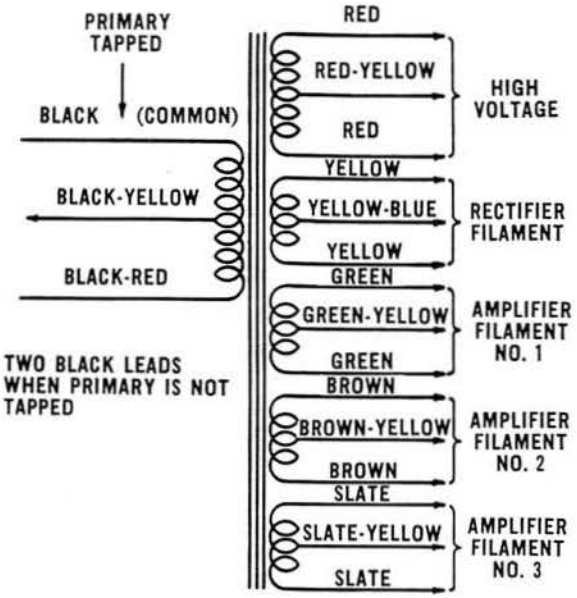
- Rotor contacts on tuning condenser dirty
- Open cathode or screen bypass condenser
- Shorted bias resistor
- Aligned too sharply
- Screen bypass condenser open
- I. F. transformer out of alignment
- Shorted cathode bias resistor
- Poor coil contacts at lugs
- Shorted cathode bypass condenser
- Plate decoupling resistor shorted
- Open plate bypass condenser
- Primary of coupling transformer opening
- Open cathode bypass condenser
- Defective cathode resistor
- Leaky audio coupling condenser
- High resistance from primary to secondary

Distortion or Hum

- Shorted filament bypass condenser
- Antenna too long, causing overload
- Shielding making poor contact
- Shorted antenna coupling condenser
- Open cathode bypass condenser
- Stage out of alignment
- Too sharply tuned oscillation
- High resistance between primary and secondary of I. F. transformer
- Shorted grid or plate coupling condenser
- Cathode bypass condenser shorted
- Audio transformer open or shorting
- High resistance from primary to secondary of audio transformer
- Shorted cathode bypass condenser
- Screen grid circuit open
- Shorted turns on output transformer
- If pushpull tubes may be unbalanced

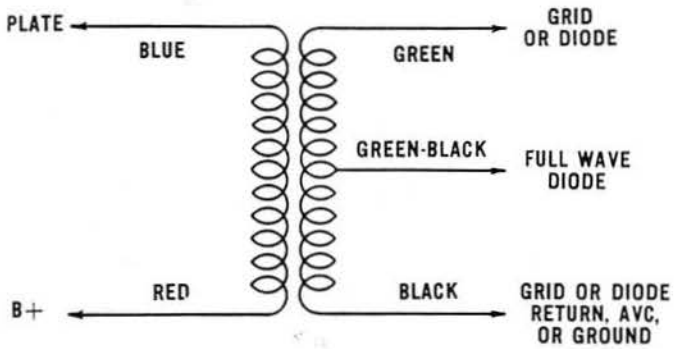
R. F. Stage — I. F. Stage — 1st Audio Stage — Output (Power) Stage

EIA Color Codes

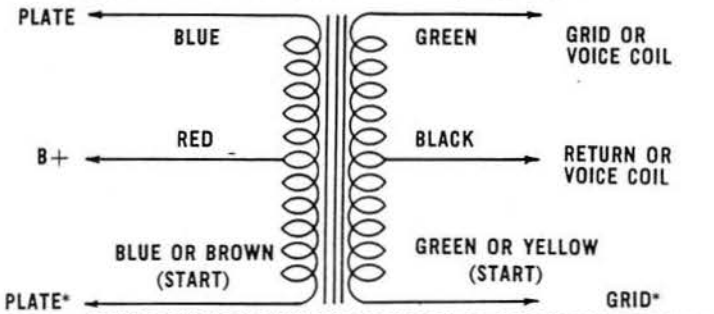


POWER TRANSFORMER

I-F TRANSFORMERS

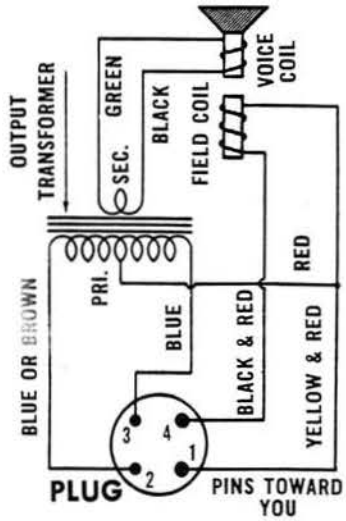


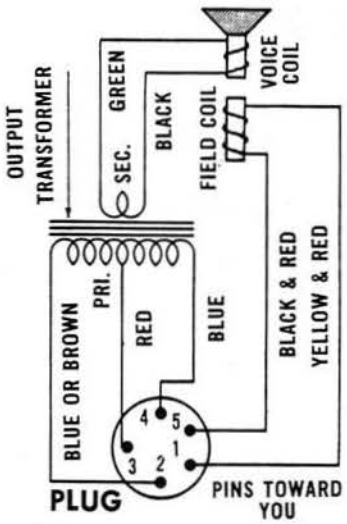
AUDIO & OUTPUT TRANSFORMERS

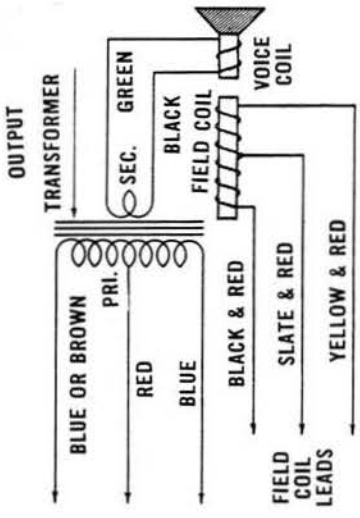


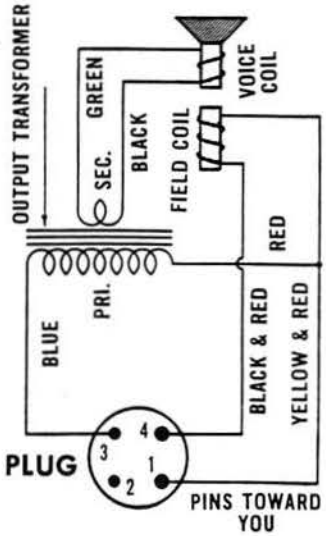
*FOUND ONLY ON PUSH-PULL PRIMARY OR SECONDARY WINDINGS

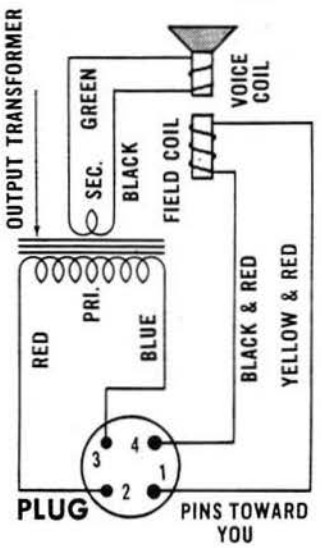
SPEAKER LEADS AND PLUG CONNECTIONS

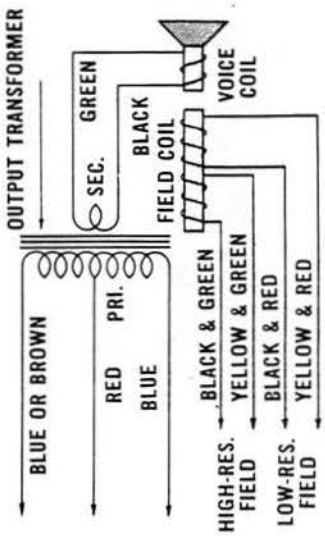












CHICAGO STANDARD TRANSFORMER CORPORATION

3501 ADDISON STREET
CHICAGO 18, ILLINOIS

Printed in U.S.A.

ANNOUNCEMENT: Gary Schneider, owner of Play Things Of Past, has issued a new Catalogue #3. This catalogue contains thousands of radio parts, magazines, books, tubes and other things of interest to the radio collector/restorer. In fact, this book contains more parts than many other catalogues or parts lists I have seen. He also sells radios and speakers. While the majority of material is devoted to battery sets, the collector of AC sets will also want to own this catalogue. The only complaint that I have is that some categories of parts and paper are located in more than one place in the catalogue. The catalogue is available by sending $3.50 to: Gary Schneider, Play Things of the Past, 9511-23 Sunrise Blvd., Cleveland, Ohio 44133. There is also a retail store at 3552 West 105th Street, Cleveland, Ohio (216) 582-3094. This is one catalogue every radio set and paper collector should have. PBJ ##

Jerry Berg of the Committee to Preserve Radio Verifications of the Association of North American Radio Clubs writes:

Thanks for the issue of CHRS, and in particular, the mentions of CPRV and yours truly. I enjoyed the article on radio stamps. I wonder if there is any definitive information on where "EKKO' came from?

Thanks, s/ Jerry.

Editor's Note: Can anyone shed any light on the "EKKO" question? The alusion to "echo" is clear enough, but likely there is more to the story. ##

Bruce Kelly, curator of the Antique Wireless Association Museum, writes:

Thanks for copy of CHRS Bulletin ... will keep as personal copy. AWA Library receives one which is read and filed.

You fellows have improved your paper, nice work, with color stamps on cover, etc.

I complimented Mike Adams on his documentary on Herrold and you were a real "pro" in the film/video!!

Had only one comment ... I may have missed it but Mike should give credit for the invention/development of the arc phone to Poulsen.

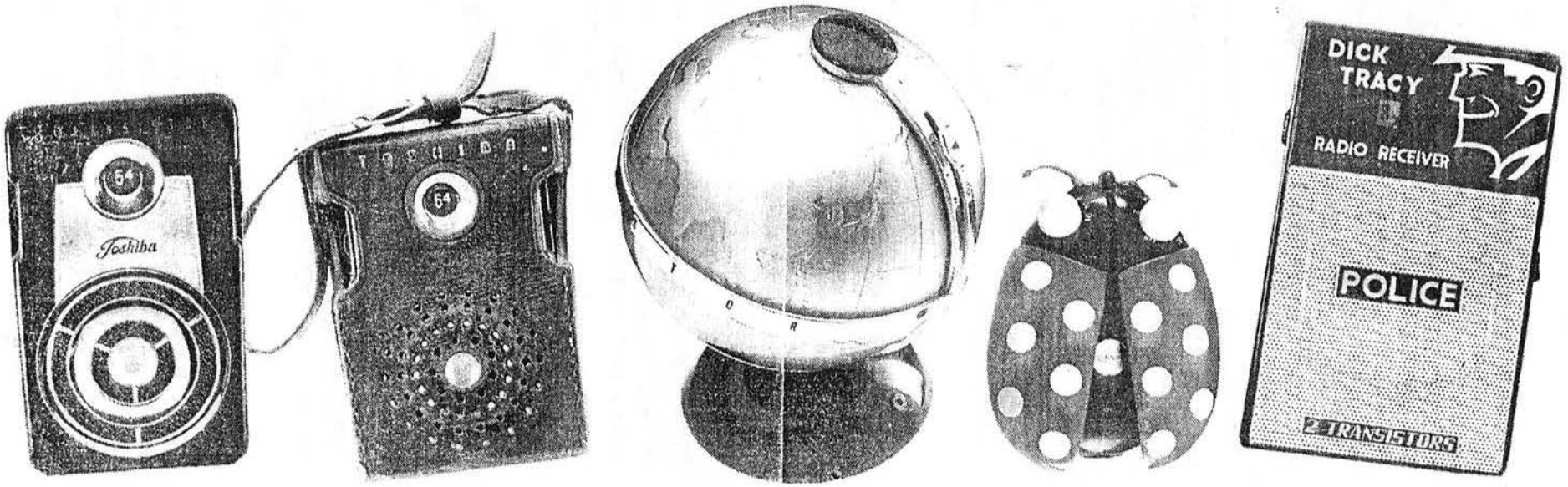
Real nice you fellows could make the Conference, for you again and Mike the first time.

...

CU, s/ Bruce ##

IN MEMORIAM

James B. Downer
983 San Miguel Road
Concord, CA 94518



Photographs by Henry Blackman, Chronicle Books

Roger Handy's collection of transistor radios includes, from left, an early Japanese model, also shown in its leather case; novelty radios shaped like a globe and a ladybug, and one with Dick Tracy's profile.

Tuned to an Era Before Boom Boxes and Walkmen

By RITA REIF

Transistor radios from the 1950's and 60's — more than a thousand of them — hold a singular fascination for a California secondhand dealer.

AFTER 15 YEARS OF COLLECTING, Roger Handy, a secondhand dealer and harmonica player, says he has more transistor radios in his sock drawer than anything else. And although space is tight in his Santa Monica, Calif., apartment, he can't resist buying examples of the world's first tiny radios.

"What gets me is the size — they're not much bigger than a pack of cigarettes," explains Mr. Handy, who was born in 1947, the year transistors were invented at Bell Laboratories. "It's also the 50's colors — turquoise, coral, pink and green — and the Studebaker styling."

Mr. Handy's enthusiasm permeates "Made in Japan: Transistor Radios of the 1950's and 1960's," a book about his collection to be published next month by Chronicle Books (paper, $16.95). The work, which was conceived by him, was written by Aileen Antonier, a nostalgia specialist, and organized by Maureen Erbe, a graphics designer.

How many transistor radios does Mr. Handy own? "I lost track at a thousand about a year ago," he says.

While he focuses mainly on the pocket-size Japanese models, he also buys Japanese novelty radios. One, made by Matsushita, is emblazoned with Dick Tracy's profile; several others are in offbeat shapes: a pair of sunglasses, a globe and a ladybug.

The earliest transistor radios were actually made in America and are well represented in Mr. Handy's collection. Among them is an example of the very first model made, the Regency TR-1, which was the 1954 brainchild of engineers at Texas Instruments of Houston and Industrial Development Engineering Associates of Indianapolis. This radio weighed less than a pound and was sized to fit into a shirt pocket. Molded of green plastic, it soon multiplied in various colors and was copied by other manufacturers.

The Regency was widely admired for its trimly designed case, dial and grid, and in 1956 it was selected by the Museum of Modern Art for a Paris show, "American Art of the 20th Century." A year later, however, the Regency was outpaced in sales by jazzier Japanese imports.

Led by Sony, the Japanese styled their radios to reflect the glitzy American automobiles of the period. Toshiba, Hitachi, Sanyo, Mitsubishi and a host of other companies devised radio speakers resembling radiator grilles and dials inspired by dashboards. The figures on the front of a radio indicated the number of transistors inside, much as those on cars told the number of cylinders. Even the radios' names — Fleetwood, Imperial, Monarch, Aurora, Capri, Zephyr and Lafayette — seemed dreamed up in Detroit.

Mr. Handy's love affair with transistor radios began when he was 10 years old and first noticed them in electronics stores. "I wasn't attracted to them as radios but as great-looking objects," he recalls.

As a boy, Mr. Handy never owned a transistor radio. But as a teen-ager, hooked on rock-and-roll, he'd listen to Elvis Presley on his sister's radio — "under the covers so my Mom wouldn't hear."

The urge to collect transistor radios dates to 1964, when Mr. Handy saw the movie "Dr. Strangelove." The scene that triggered his acquisitiveness occurs after Gen. Jack D. Ripper, the gung-ho base commander portrayed by Sterling Hayden, gives orders that all transistor radios on the base be impounded, only to be flabbergasted when a shopping cart of them is wheeled into his office.

"I wanted that shopping cart full of radios so badly," Mr. Handy says.

As it turned out, he began to satisfy this yearning in 1979, when he bought a transistor radio in a Salvation Army thrift shop. It looked like one he had admired as a child, and it was that year that he decided to build a collection.

No one is certain how many transistor radios were produced during their heydey in the late 1950's and early 1960's. But the majority of models were turned out by the tens of thousands. And although some were thrown away when the batteries died, many survived.

Mr. Handy views all of this as good news, adding that his radios cost very little, from 50 cents to $10. He shops for them at flea markets and at the garage sales he attends to buy paintings, bric-a-brac and collectibles for his business as a secondhand dealer. He says he has never paid more than $50 for any transistor radio. But his are not for sale.

"If I had a radio in triplicate, I might part with one, usually in a trade," he says. "I just like them too much."

Meanwhile, Mr. Handy continues to buy models of radios he has never seen before. And he says he sometimes acquires duplicates because he forgets that he already owns a particular model. "Here's the thing," he says. "I don't lose them so much as I lose track of them."

So why go on collecting them? "This is an item that was overlooked until now. Everything is out there for the getting, and that keeps me hunting. My collection is still in its infancy."

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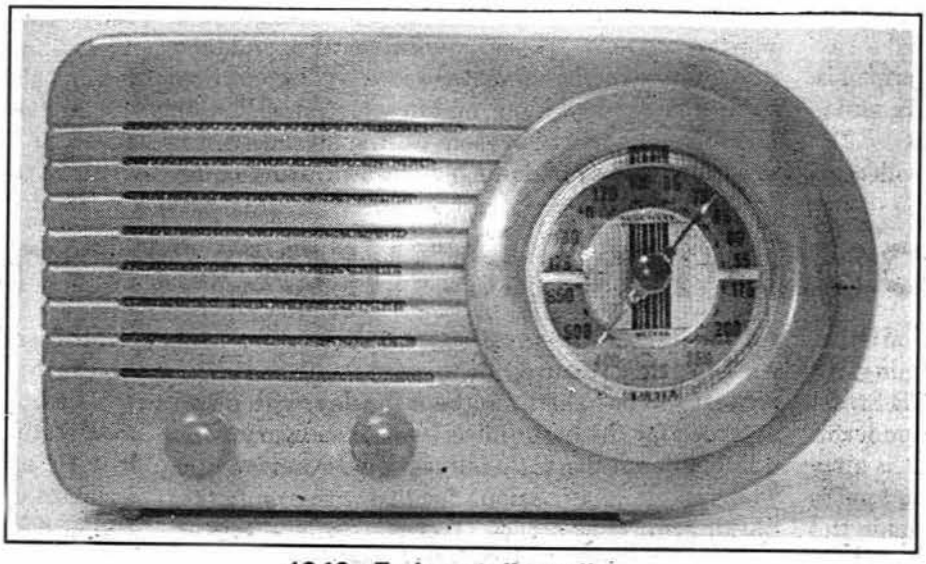
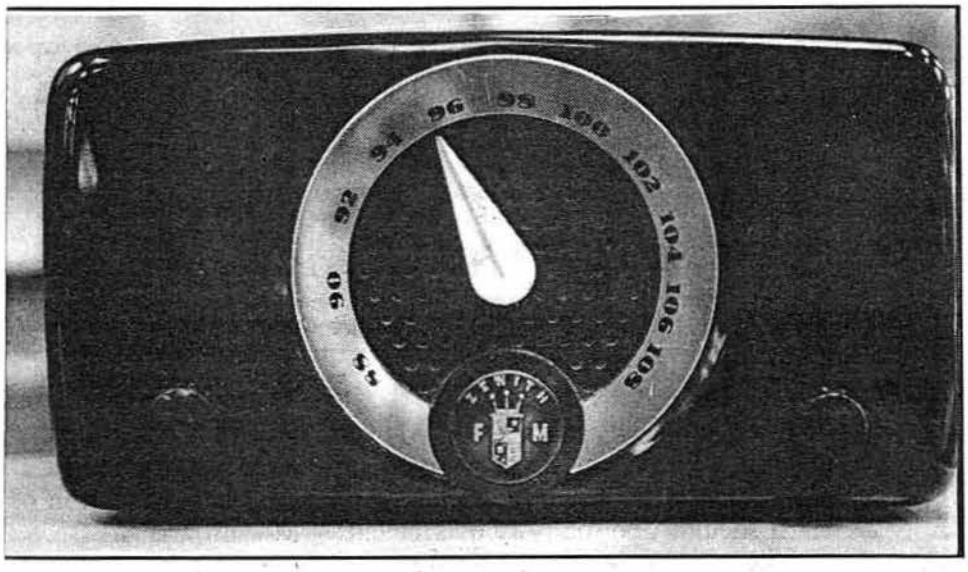
CHRS RECOMMENDS:



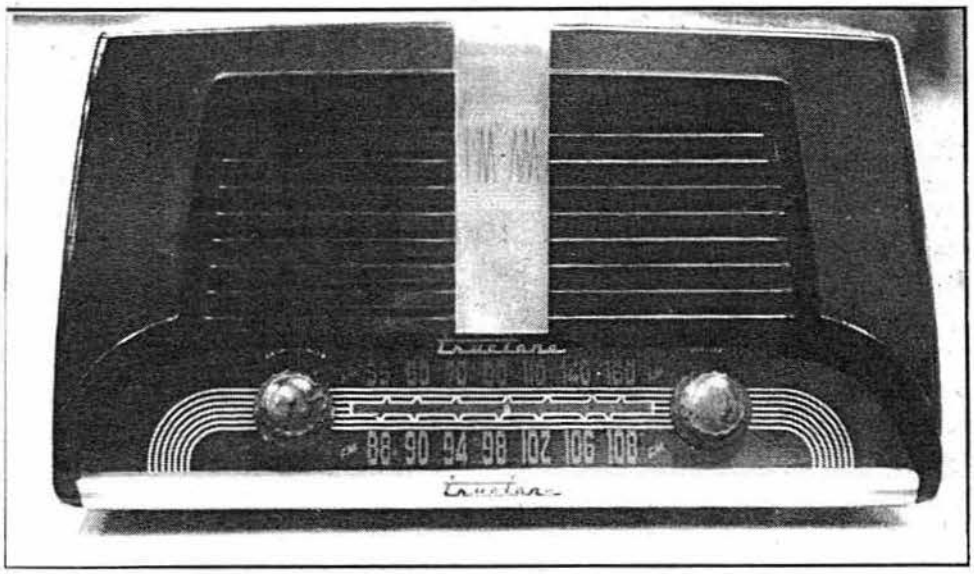
1940s Fada catalin radio

May 1994 **Antiques Today**

Antique Journal JUNE 1994



(Above) Zenith FM radio, c. 1940s. (Below) Truetone AM/FM radio.



The Antique-world media has discovered little plastic radios, even brown ones!

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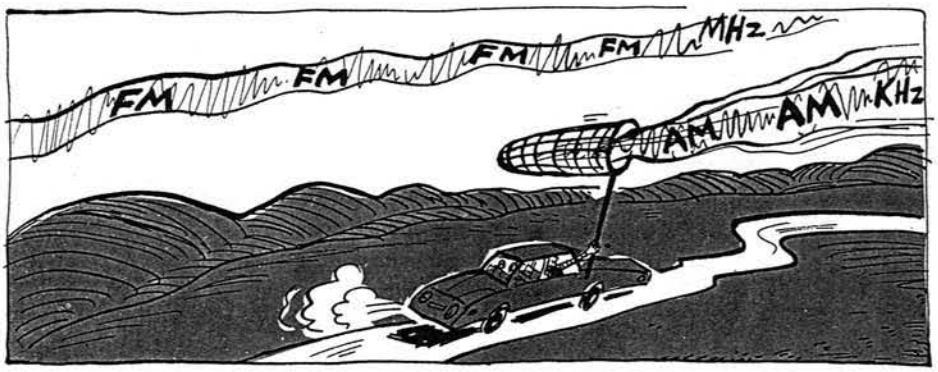
ROAD SIGNS

IVAN BERGER

A NEW MORNING FOR AM?

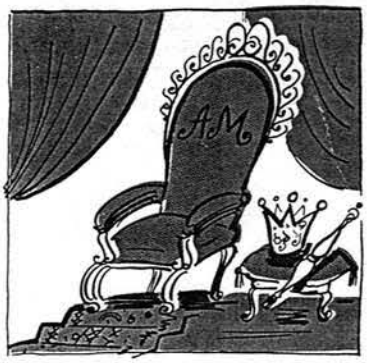


No matter how much money we spend on fancy car stereo, many of us still spend part of our mobile listening time tuned in to good old AM. It brings us instant news of traffic jams and weather, fills our cars with other people's voices on lonely drives, comes in where FM stations aren't available, and sometimes lets us keep listening without retuning as we drive through county after county. But we listen most to FM, the upstart that dethroned AM from king of radio to being, at best, a duke.

There are hopeful signs for AM broadcasters, but the band has a lot to recover from. Everybody knows by now of FM's greater fidelity. Radios that receive FM have long been only a little more expensive than AM-only models. And interference on the AM band has grown, due to overcrowding and the use of more and more electrical and electronic devices.

What really shifted the balance was stereo. A single standard for FM stereo was set soon after stereo records hit the market. It took another 20 years or so for AM stereo to arrive. And then the FCC approved not one but several AM stereo systems, leaving the marketplace to decide which would win, so stations and receiver makers were unsure which format to espouse. Most took a wait-and-see attitude and held it for a decade. The field soon narrowed down to Motorola's C-QUAM and the Kahn (ISB) system. But Motorola, with the capacity to make C-QUAM receiver ICs, gained the upper hand. According to *Radio World*, an industry newspaper, there are now 24 million C-QUAM receivers in circulation, and C-QUAM is used by 591 U.S. stations; six other countries (Australia, Brazil, Canada, Mexico, Japan, and South Africa) have adopted it as their standard. Fewer than 20 U.S. stations use the Kahn system, and there's not much equipment to receive it.

Now there are moves afoot to bind AM's wounds. On the stereo side, Congress has finally ordered the FCC to pick a single system. It seems likely that C-QUAM will be picked. However, seven out of every eight U.S. AM broadcasters use no stereo system as yet, and some engineers feel C-QUAM has unresolved technical problems, so it's no shoo-in.



Illustrations: Beata Szpura

To deal with interference between stations, the AM band has been expanded by 100 kHz. As more and more new radios are made that can receive stations on the new frequencies (1,605 to 1,705 kHz), more and more stations will migrate to those frequencies.

The AMAX certification system for high-quality AM radios has led to only one home product that I know of, Denon's TU-680NAB tuner (see *Audio*, April), but lots of AMAX-certified Delco car stereos are now on the road. And even the non-AMAX AM tuners in car radios are often far, far, better than those in home equipment.

The Radio Data System won't do as much for AM as for FM. The RDS radios won't be able to show the name of the song an AM station's playing, since only FM stations can transmit the needed data (at least for now). But the system will help travellers identify and locate the stations they pick up and help them find the kind of programming they want, for AM and FM alike.

One cloud on AM's horizon is the possibility of digital broadcasting, but that cloud may b silver-lined. If transmitted by satellite, digital signals would blanket most of the country, surpassing the reach of even clear-channel AM stations. But there's also talk of going digital on both the AM and FM broadcast bands. Presumably, the audio quality would be the same for digital transmission via either band—and AM digital signals would maintain their greater reach. That might even put AM back on its long-lost throne. A

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CHRS RECOMMENDS:

The Radio Collector

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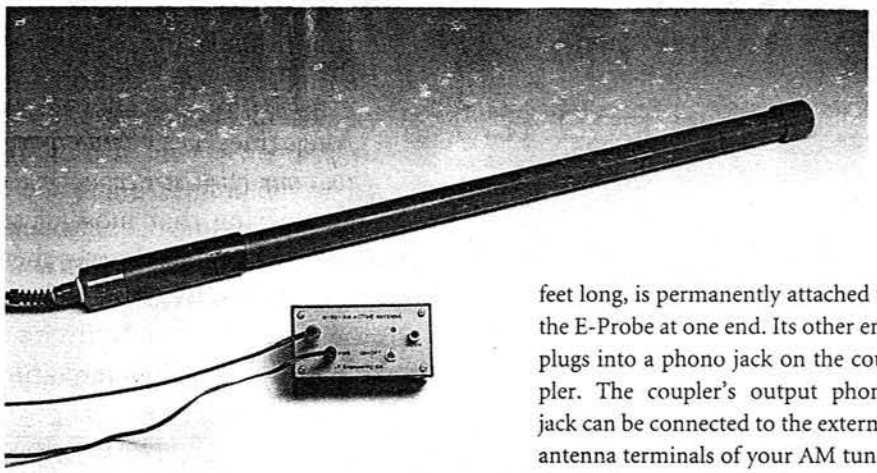
LF ENGINEERING M-601 AM ANTENNA



The M-601 is a fully sealed 26-inch-long active antenna designed for the AM broadcast band. Operating between 530 and 1,705 kHz, this high-impedance antenna contains a proprietary signal amplifier with 6 dB of voltage gain, plus a high-pass filter for reduction of lower frequency interference caused by light dimmers and power lines. According to LF Engineering, the M-601 is effective in fringe areas where a long-wire antenna of equal gain would pick up noise or would not be practical to erect.

The M-601 consists of the 26-inch E-Probe antenna and a small antenna coupler into which may be mounted a pair of 9-V batteries. Alternatively, the included a.c. adaptor can be plugged into the coupler for operation from the power line. The M-601 system consumes only 10 mA of current. A coaxial cable, 50 feet long, is permanently attached to the E-Probe at one end. Its other end plugs into a phono jack on the coupler. The coupler's output phono jack can be connected to the external antenna terminals of your AM tuner or receiver or, via an accessory inductive coupler, to the loopstick antenna of AM sets without such terminals. A stainless steel mounting clamp is included, so you can attach the E-Probe section to a mounting post to elevate it. The suggested retail price for the M-601 with E-Probe, coupler, and a.c. supply is $89; the accessory AC-600 inductive coupler is $15. Both prices are postpaid within North America.

Company Address: 17 Jeffry Rd., East Haven, Conn. 06513.
For literature, circle No. 93

LF Engineering claims that this is the first active outdoor antenna designed for AMAX radios. For those of you who haven't heard about AMAX, it is a new voluntary standard intended to improve the quality of AM radio. One of the first tuners to take full advantage of the AMAX standard is the Denon TU-680NAB (*Audio*, April). Having had an opportunity to test this remarkable tuner, it seemed appropriate to use it in combination with the M-601.

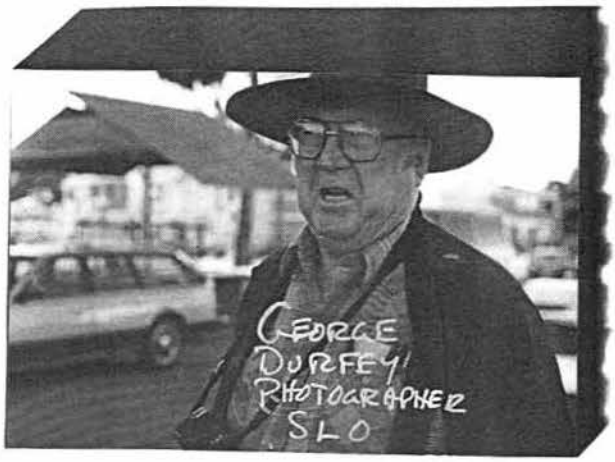
Rather than mount the M-601 on my roof, as recommended by its maker, I decided that a fairer comparison would result if I first logged the number of acceptable AM signals received with just the loop antenna supplied with the Denon tuner. Following that count, I would connect the M-601 to the tuner and see if there was a noticeable improvement in signal quality or an increase in the number of acceptably received signals. Fortunately, the TU-680NAB allows connecting an external AM antenna without having to disconnect its own loop antenna, making comparison tests extremely simple and reliable.

With only the loop antenna connected, I logged 29 signals across the AM broadcast band in my ground-level laboratory at midday. Of these, approximately a half dozen were plagued by relatively high levels of noise and interference. When I connected the M-601 and repeated the test, I received 31 signals, only two more than before. However, of the six or so that had been noise-ridden, only two still suffered from interference and noise. Furthermore, many of the signals that had failed to light up all of the tiny LEDs in the tuner's signal-strength display were now strong enough to illuminate the entire string of them. The manufacturer's claimed 23 dB of overall power gain for the M-601 system seems to be substantiated. Even the two new signals were clear enough and sufficiently noise-free to be enjoyed.

Repeating the tests at night (when AM reception generally extends for hundreds of miles), I logged only 28 usable signals without the M-601 (one of the signals that had come in clearly by day was now plagued by interference, presumably from a distant station not received during daylight hours). With the M-601, the number of usable signals increased to 33. I have no doubt that if I had taken the trouble to mount the M-601 outdoors at a somewhat higher elevation, I would have been able to pick up many more usable signals.

The LF Engineering M-601 AM broadcast antenna is a fitting addition to the Denon TU-680NAB or to any tuner or receiver whose owner wishes to explore the revitalized world of AM radio.

Leonard Feldman



LANDMARKS IN TELECOMMUNICATIONS TECHNOLOGY

San Francisco Chronicle
MONDAY, DECEMBER 6, 1993

BY ARTHUR M. LOUIS
Chronicle Staff Writer

If Samuel F.B. Morse were to return today and survey the frontiers of telecommunications — pocket-size cellular telephones, 500-channel cable-TV hookups, interactive multimedia, satellite transmissions, fiber optics — he would declare once again: "What hath God wrought?"

With those words — tapped in code on an electromagnetic device 149 years ago and transmitted by wire from Washington to Baltimore — Morse single-fingeredly ushered in the age of telecommunications.

There had been nothing remotely comparable to Morse's telegraph. The state of the art consisted of semaphore towers, spotted on hillsides across the countryside — no more advanced technologically than smoke signals.

Entrepreneurs took Morse's invention and ran with it. Within a third of a century, telegraph lines spanned the nation, an undersea telegraph line connected the United States and Europe, and Alexander Graham Bell devised a transmitter/receiver that conveyed the sound of the human voice via the same electromagnetic pulses and the same kinds of wires that carried Morse's code.

Wireless communications came into their own early in this century. Once they did, they too took off. Less than two decades elapsed between the day that Guglielmo Marconi transmitted Morse code across the Atlantic and the day that a radio station in Pittsburgh made the first commercial broadcast. TV was demonstrated as early as 1927, but didn't begin to bloom until the Great Depression and World War II had run their course.

In recent decades, land-line and wireless technology have intersected repeatedly, with increasingly dramatic results. Wireless telephones and paging devices have become as common as leather-bound briefcases. TV is transmitted not only through the air, but also — with greater clarity — through wires extending into tens of millions of homes.

In the near future, telecommunications companies such as San Francisco-based Pacific Bell plan to equip the homes of their customers with fiber-optic cables that will carry voice, data and video signals simultaneously, providing a dizzying selection of entertainment, information and interactive services.

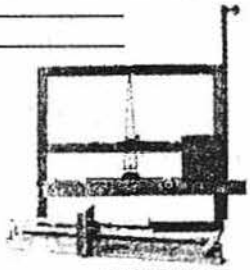


PHOTO COURTESY OF SMITHSONIAN INSTITUTION

Morse's first electric telegraph

1844

The first public demonstration of Samuel F.B. Morse's electric telegraph. Morse sent the message "What hath God wrought?" from Washington, D.C. to Baltimore.

1861

A transcontinental telegraph line begins operating, dooming the Pony Express.

1866

A transatlantic telegraph cable opens. Permanent communication by wire is established between the United States and Europe.

1876

Telephone transmission of the first complete sentence, by Alexander Graham Bell to an associate: "Mr. Watson, come here, I want you!"

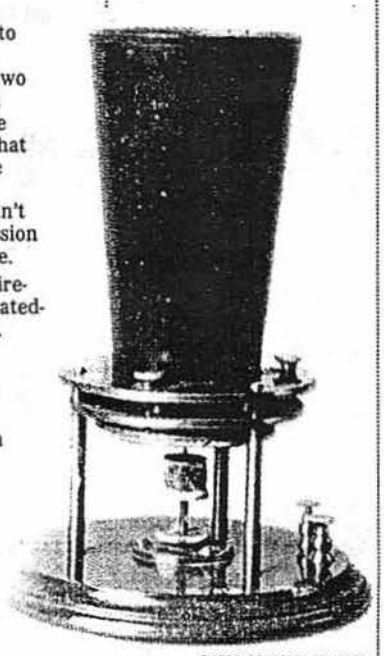


PHOTO COURTESY OF AT&T

The liquid telephone that transmitted Bell's historic words

1901

The first transatlantic wireless signal — the Morse code symbol for the letter "s" — is sent from England to Newfoundland. The sender, Guglielmo Marconi, had been experimenting since 1895.

1920

The beginning of commercial radio broadcasting in the United States. Station KDKA of Pittsburgh reports the presidential election returns.

PHOTO COURTESY OF THE BETTMANN ARCHIVE

Guglielmo Marconi used this receiver for the first radio transmission to Newfoundland

1925

The first commercial use of facsimile technology. Photos are transmitted over telephone wires between New York, Chicago and San Francisco. The first customers are press associations.

1927

The first public demonstration of television in the United States, with a private-line signal beamed from Washington, D.C., to New York, from Secretary of Commerce Herbert Hoover to Walter Gifford, head of AT&T.

1931

A patent is granted for a system using coaxial cable as a wide-band, long-distance medium potentially usable in television transmissions.

1956

August

Bell Laboratories announces its first experiment with a picture phone. (The device still has not caught on with consumers.)

1956

September

The first transatlantic telephone cable goes into operation. Overseas calls previously had been placed via radiophone.

1961

The Federal Communications Commission appoints a committee to plan a communications-satellite system.

1977

AT&T announces plans for a fiber-optic communications system. Half-inch cables containing 24 light guides will carry voice, data and video signals.

PHOTO COURTESY OF AT&T

Colored fiber-optic strands like these made light-wave communications possible

1981

The FCC approves commercial use of cellular telephones.

CHRONICLE FILE PHOTO

Cellular telephones have become commonplace

BY UPI/BETTMANN

In 1927, Herbert Hoover, who was then secretary of commerce, participated in the first demonstration of TV