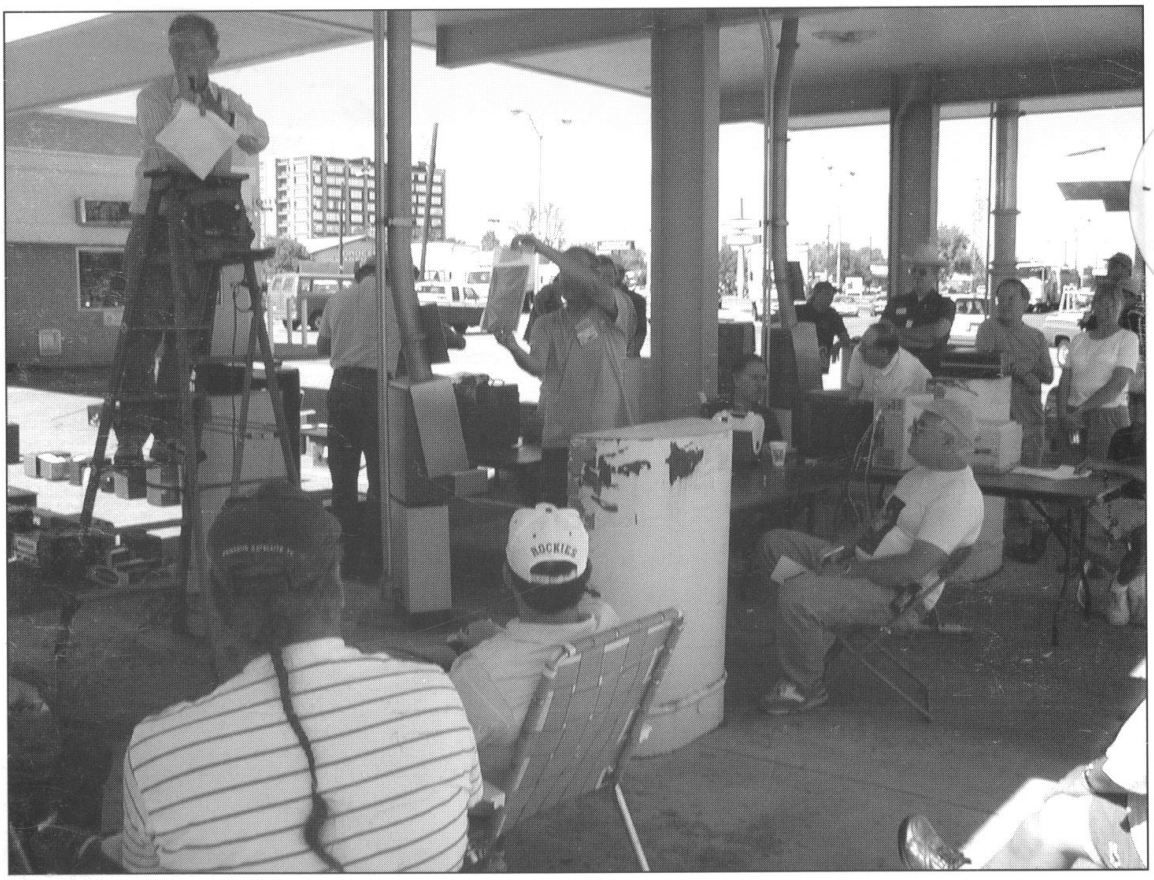
The Colorado Radio Collectors
Antique Radio Club

FLASH!

Volume 11 November ☺ December 2000 Issue 6



In this issue...

♦ Cold War Radios ♦ Gassy Tubes ♦ CRC Auction 2000 Results ♦
♦ Build Mark's "Two Step" Regenerative Receiver ♦ Book Bargains for CRCers ♦

ABOUT THE COVER

Going, going, *sold* to another lucky buyer! This great picture, taken by Jay Carlblom CRC member, captures the action during the CRC auction 2000. Turn to page 3 for a summary of all the sales.

The Colorado Radio Collectors Antique Radio Club

Meetings: Unless otherwise noted in this journal, regular meetings are held on the second Sunday of every other month starting with January (except: 3rd Sunday of May) at 1:00PM at the VectraBank Building, Community Room, 1380 S. Federal Bl. The meeting normally includes business items, discussions, "show and tell", a raffle and a swap meet.

Membership: All dues are $12.00 annually. Joining dues are prorated to June 1st. Contact club for foreign rates. Send dues and membership inquiries to the CRC Treasurer, Robert Baumann, 1985 S. Cape Way, Lakewood CO 80227, (303)988-2089, RGBdenver@aol.com

Article Contributions: Submission of articles are always appreciated. This would include historical and technical items as well as stories about individual collections. Articles may be written or e-mailed, and need not be in final form. Submissions and requests for information should be directed to the CRC "Flash!" Publisher, Larry Weide, 5270 E. Nassau Cir., Englewood CO 80110, (303)758-8382 lweide@attglobal.net.

C.R.C. 1999-2000 Officers

President	Tom Kelley	
	Boulder	(303) 444-1837
Vice Pres.	Mark Dittmar	
	Westminster	(303) 403-0669
Treasurer	Robert Baumann	
	Lakewood	(303) 988-2089
Publisher	Larry Weide	
	Englewood	(303) 758-8382
Archives &	Charles Brett	
Book Sales	Colorado Spgs	(719) 495-8660

Want Ads: Submission of Sell/Want ads are always free to CRC members. Non-members may advertise in the Flash! for $0.20 a word. Display advertising is available by contacting the CRC publisher, Larry Weide, for info and rates.

Publishing Deadlines: All submissions must be submitted by the 1st of Feb, Apr, Jun, Aug, Oct and Dec. for publishing in the following months.

Thanks to the **Pressworks** for printing the Flash! - **(303) 934-8600**

Upcoming 2000/2001 CRC Events
Regular Meeting, November 12th - Regular Meeting January 14th

Colorado Radio Collectors Antique Radio Club

Founded October 1988

Dedicated to the Preservation and Education of Wireless, Radio, Television and Associated Equipment.

Volume 11, Issue 6 **November/December 2000**

TABLE OF CONTENTS

A Chat with the President 2

The CRC Auction 2000 - Results - by Larry Weide 3
See, I told you there were some bargains left this summer!

Got Gas? - by Ed Brady 7
Unfortunately, Tums won't help a gassy tube, but it's not all bad either

Two Hot Cold War Radios - by Wayne Gilbert 9
You do still have your backyard bomb shelter ... eh, don't you?

Mark's Corner - Do the "Two Step" - by Mark Dittmar 13
Mark tells us how to build it, plus hints on maximizing regen receivers

Collector Books for Sale - Great deals for CRC members! 21

The Open Trunk - Want Ads and For Sale Items 23

It's with regret and sorrow that we announce the passing of CRC past member Gerry Labbe. Gerry was a WWII B17 bombardier, engineer, ham radio operator and master wood carver.

A CHAT WITH THE PRESIDENT

You Should'a Been There!

by Tom Kelley, CRC President

Hello again fellow club members,

Well, all I can say is, read my headlines. We had a great auction this year. From all accounts it seems that our return to the auction format, for our annual September activity, was the right way to go. We had higher quality items coming out, much better attendance, continuing interest throughout the proceedings and the CRC earned much more than at last year's swap meet format. We tried a new registration technique this year that seemed to add to the attendee interest. That was, to disburse the assignment of lot numbers such that the value of items and the ownership of items were randomly distributed in selling order. So, the sellers didn't get bored, and all the "goodies" didn't get sold up front.

I want to thank all the people who made the auction possible. These were the folks who did the registration, saw to it that we had power, (man) handled the items for review and bidding display and got the finances done in a quick and efficient manner at the end of the auction. To paraphrase a famous man, we owe so much to so few.

As is usual, we will publish a name/phone/email list of CRC members in the January issue of the Flash. It's *very important* that you make sure your email addresses are up to date. The best way to do this is to send Larry Weide a message so that he can be sure to include your correct address. Tom

The CRC Auction 2000 Results

by Larry Weide, CRC Member

In a word, this auction was a good one! OK, OK, so it's three words. However, everyone I've talked to agreed on the following;

- The auction length was good, there was lots of interest and all went quickly and flawlessly.

- Although there weren't very many high priced items, we did have an abundance of affordable items without being "nickel and dimed".

- And finally, we couldn't have asked for nicer weather.

As far as the finances go, about $3,000 changed hands. Of course the CRC earned 10% of that in seller commissions.

A few words of appreciation and thanks;

To Dave Boyle, our auction referee. And, to our hard working treasurer Robert Baumann who, along with handling all of the finances, managed to have a portable generator on hand to power the computer during the registration period. Unfortunate circumstances had prevented us from getting the building key until just before the auction started.

Speaking of computers, thanks to Fred Bantin for stepping in and providing us with a great one.

Kudos to all the folks who lugged and hauled the lot items back and forth for preview and bidding display; Jerry Tynan, Rick Ammon, Mike McCutheon and Tom Kelley. From my position of "heads down" computing I may have missed others, and I apologize for any omissions.

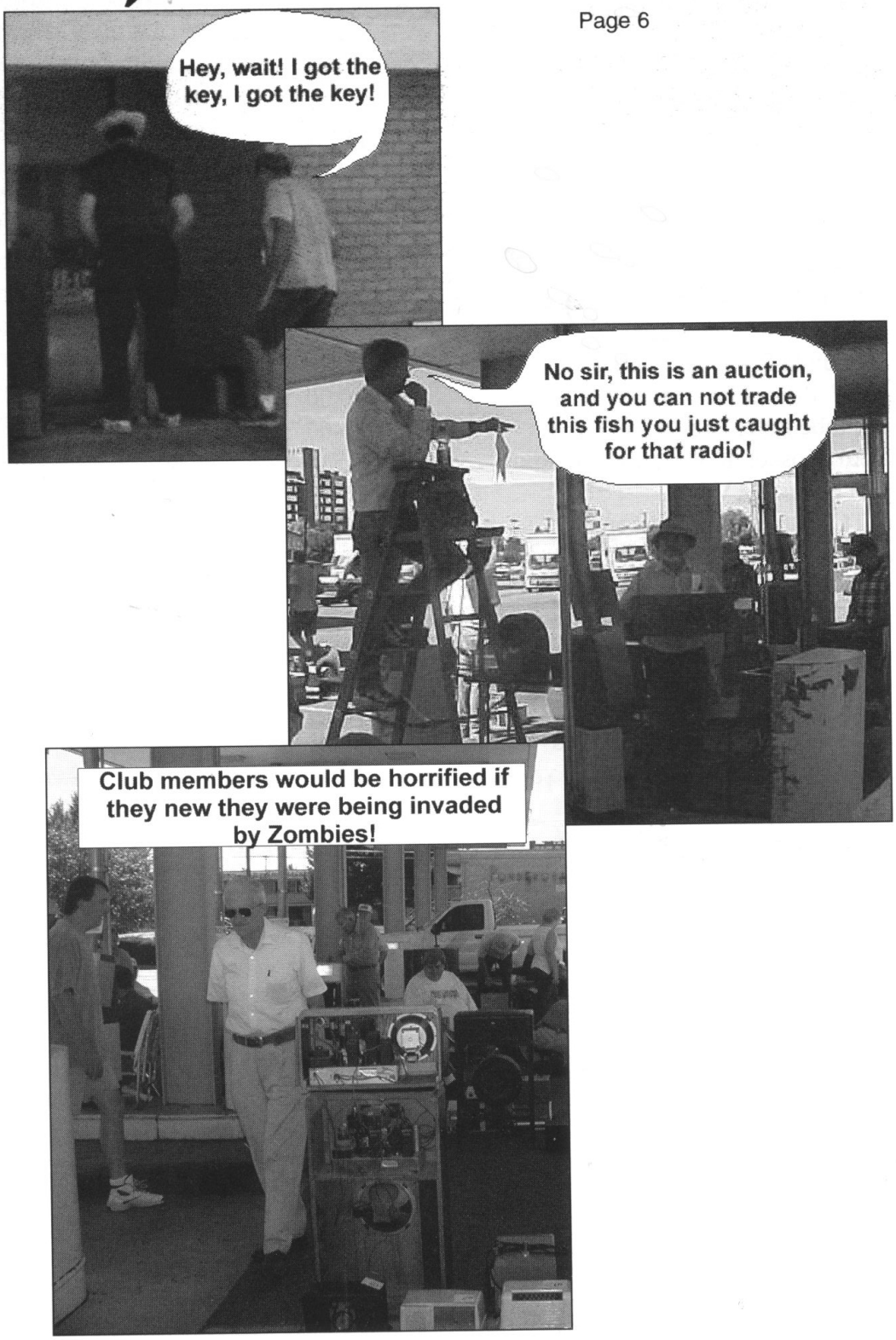
The following are the CRC auction 2000 results;

DESCRIPTION	PRICE	COND.,COMMENT
A-C Daytom XL-25 1925 battery table	25.00	
Airline 62-308 qty 2, table and console	105.00	P, NT
Atwater Kent 60 1929 table	40.00	F, NT
B&K 1460 oscilloscope	20.00	G
B&K 606 tube tester	2.50	P
B&K 667 tube tester	2.50	G
Beitman's 6 vols.	65.00	E
Beitman's diagrams 1940	7.50	G
Beitman's diagrams 1941	10.00	G
Brunswick "Coffin" with tubes	75.00	F, WT
Cornel Dubilier capacitance bridge	10.00	
Delco 3200 farm tombstone	60.00	F, WT
Emud Senior 60 1960's multiband table	95.00	E
Eveready 3 "Coffin"	35.00	F, NT
Freed Eiseman NR7 1928 battery	30.00	F, NT
GE 401 1050's bakelite white table	5.00	E
GE 401 1950's bakelite black table	2.50	G
GE clock radio 1950	7.50	F
General Radio Variac, new	10.00	
Hallicrafters 38C comm receiver	30.00	G, WT
Hallicrafters 38D comm reciever	35.00	G, WT
Hallicrafters S-40AU comm receiver	60.00	G, WT
Hallicrafters S-40B comm receiver	85.00	E, WT
Heathkit AR3 4 band bc/sw 1957	35.00	E
Heathkit signal gen and misc items	22.50	
Hickcock 600A tube tester	65.00	F
Hickock 209A volt/ohm meter	10.00	
Hickock 288X signal generator	30.00	F
Hickock 800 tube tester	85.00	G
Hickock AC51 tube tester	40.00	P
Homebrew "2 dialer" 1920's table	27.50	F, NT
Homebrew 1920's table	17.50	F, NT
Horn speaker unknow, AK E speaker	65.00	P
Little Giant pocket crystal set radio	45.00	F
Misc equip - TV camera, tube tester, etc	10.00	
Misc radios, qty 5	2.50	
Misc. chassis and cabinets	2.50	P
Misc. plastic radios, qty 18	20.00	
Misc. radios, qty 6	10.00	
Misc. test equipment, lot of 3 items	15.00	
Misc. Transistor radios, qty 20	60.00	
Misc. transistor radios, qty 9	10.00	
National Radio Inst repair course	12.50	
Philco 20 cathedral	85.00	F, NT

DESCRIPTION	PRICE	COND.,COMMENT
Philco 40-120 1940 table	60.00	F, REF
Philco 42-322 table, & unknown radios	45.00	
Philco 42-358 console	25.00	P
Philco 46-132 1946 farm table	35.00	G
Philco cathedral	35.00	
Philco console	15.00	F, WT
Pilot stereo amplifier	27.50	F
Radios, Radiola 33, & 5 others	155.00	
RCA 3RC76 table	2.00	G
RCA 811K Console	20.00	P, UNK
RCA console	55.00	E, REF
RCA Radiola 44 AR592 table	45.00	F, REF
RCA Radiola 60, Thompson Nue, Bush cab.	75.00	F, NT
RCA Radiola R7 tombstone	75.00	G, WT
RCA Radiola R9 1931 console	70.00	G, REF
RCA TV 1956 color console	10.00	G
Sencor tube tester, works	15.00	F
Sentinal, Kosner and Zenith-TO radios	115.00	
Setchel Carlson TV b/w	10.00	F
Sony TC200 stereo tape recorder	20.00	E
Sparton table model	45.00	F, WT
Stewart Warner 205AB 1946 bakelite table	2.50	P
Triplett 3432A signal generator	20.00	
Two books about oscillscopes and radio	7.50	
Unknown compact tube radio, 1930's	45.00	E
Variac 3-amp	15.00	
Variac 7.5 amp	40.00	E
Westinghouse Aeriola Sr. battery, 1920's	180.00	
Zenith 500H 1953 T/O	85.00	G
Zenith 5A01 portable	22.50	F
Zenith chairside	15.00	F
Zenith clock radio "sandman"	4.00	P
Zenith clock radio 1951	30.00	F

Condition Codes: E=Excellent, G=good, F=Fair, P=Poor
Comment Codes: NT=no tubes, WT=with tubes, REF=refinished, UNK=condition unknown

Only at the CRC Auction



GOT GAS?

by Ed Brady, CRC Member

Have you every noticed a blue or purple glow inside a tube while playing one of your radios? The following article is from the ***November 1936*** *issue of* ***"Kenyon Engineering*** *News", and shows that the Blue Glow question has been around for a long time.*

The phenomena of gas ionization within a radio tube has always been the subject of discussion and interest, among all who are familiar with radio tubes. It is a well known fact that certain types of tubes are more apt to show a sight blue glow between the internal elements than do other tubes, the reason being, in some cases, due to the material employed within the tube, which allows the phenomena to be observed more readily. However, such metals do not mean inferiority because of this inherent characteristic. Another condition of gas ionization might be caused by an inert gas, due to chemical reaction between the "getter" and another agent, manifesting itself by a glow between those elements farthest from the filament or cathode. Other types of glow are classified as fluorescent, mercury vapor base and gas.

The fluorescent glow is usually violet color and is noticeable around the inside surface of the glass bulb. This glow is a phenomenon caused by electronic bombardment taking place within the tube, and changes in intensity with that of the signal. It may at times be quite brilliant. Fluorescent glow has absolutely no effect on the operation of the tube. In fact, tubes with this characteristic are particularly good as regards gas content.

Mercury vapor haze is a blue glow which is noticeable between plate and filament in mercury vapor rectifier tubes, the perfect operation of which is dependent upon a mercury vapor that has been placed in the bulb during the exhaust period. Therefore this kind of blue haze is in no way detrimental to the operation of these tubes.

Naturally, we are prone to believe that tubes which show a

glow within their elements are apt to be of inferior quality and do not represent the present day high standard of manufacture which has been attained within the industry. Nevertheless, there are marked distinctions between those tubes, which are actually defective and those which are inclined to possess such a phenomena as explained above. The defective can invariably be detected by a pinkish-blue or extremely pale-blue color, which generally is visible throughout the entire tube or in some cases between the filament and plate. Its presence, when of large content, affects the operation of the tube to the extent that erratic performance is noticeable. Gassy tubes should always be replaced with new tubes. Many tubes that show a distinct blue or violet color, which generally appears very close to the plate in most types and confines itself within a definite region, are perfectly good tubes for circuits in which they are designed to operate.

When in doubt as to the glow content of tubes, a sure test can be made by bringing a magnet close to the bulb. A gassy tube will not be affected while the fluorescent glow, which has no effect on the performance of the tube will shift about as the magnetic field is moved.

TWO HOT COLD WAR RADIOS

by Wayne Gilbert, CRC member

U235! The only more exploitative name for a radio in 1956 possibly might have been the ***Duck and Cover***, the ***Iron Curtain***, or maybe the ***Nuclear Fallout***. We were in the middle of the Cold War, with the threat of a nuclear attack constantly in the back of our minds, and Sylvania Radio Company was well aware that, when they named their 1956 portable model 3303TA the U235 Prospector, they were exploiting this public fear for the purpose of increasing their sales and profits.

The Korean police action had shown us the Communism's power, and national defense was the focus of the era. By 1953 most radio manufacturers had started marking radio dials with a standard Civil Defense mark on each end of the dial for easy reference in the event of a national emergency. It was a time when the American public believed that we were in an arms race to the death with the Soviet Union, and that it was the duty of every patriotic citizen to assist in preparing our country s defensive arsenal. We had to quickly build enough nuclear weapons to convince the Soviet Union that the United States would be the victor of any nuclear holocaust.

The Sylvania "U235" portable was only one of the attempts by a major radio company to exploit this mass hysteria, and they did it by gently suggesting that this radio was not only meant for pleasure but could also serve as a tool in prospecting for the radioactive minerals needed to produce nuclear bombs. Advertisements show the radio in a peaceful mountain cabin, while usually emphasizing the radio's alternative use was the only patriotic way to maintain this peaceful utopia.

Not only did Sylvania's U235 radio incorporate things like a sundial and compass for the outdoors man and camper, but even more cleverly it had a Geiger counter to turn him into a modern day prospector. Of course there were minor problems with such a combination of components. The compass readily popped out of its socket and was easily lost. The sundial's gnome was at a fixed angle, making its effectiveness in telling time slightly better than gauging the sun's height and much less accurate than the wrist watch

worn by almost everyone. But these were insignificant frailties to the weekend prospector and camper who was seldom out of sight of his car anyway. It was obviously intended that the Geiger counter was to be the radio's most important accessory.

radio at any convenient roadside picnic table and after lunch prospect for your fortune. This aspect of the radio was so well designed that as the operator decreased the volume of the radio, the volume of the Geiger counter's clicks increased! There were some small design

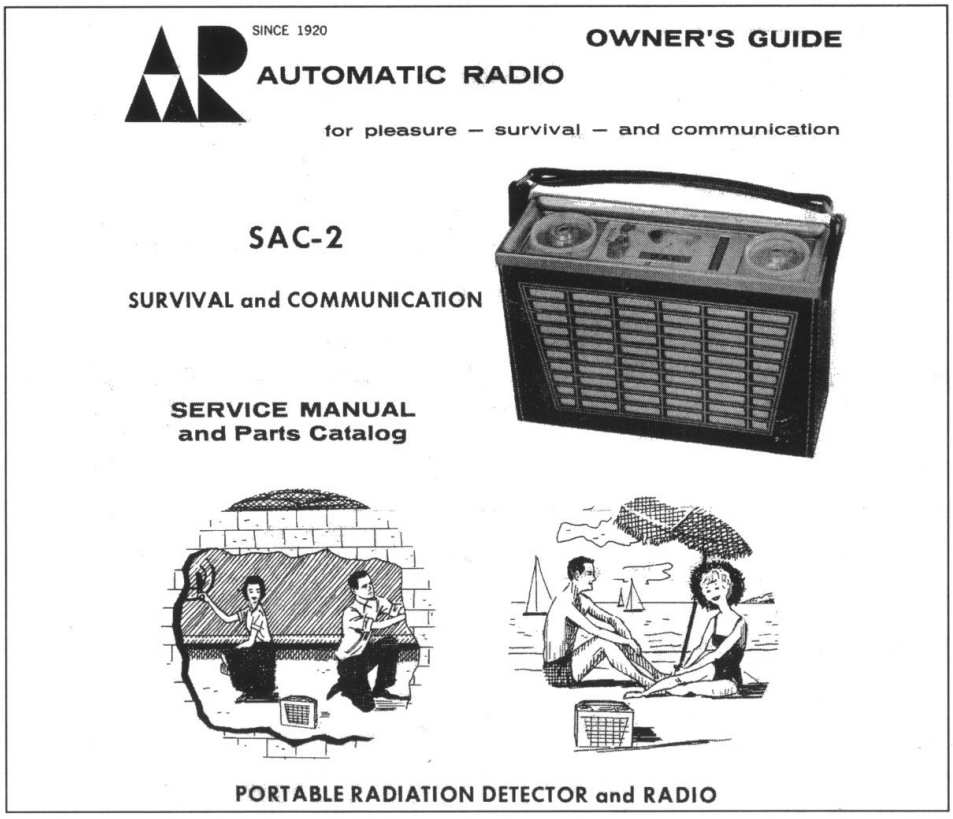
Fathers, with this radio, could visualize themselves as modern day prospectors discovering vast deposits of uranium that would make their families and the nation safe, while coincidentally also making them much richer. The areas around most campgrounds and side roads became the most prospected areas in the United States. You could leisurely listen to the musical hits of the day on this

inconveniences, such as the radio's limited ability to pick up distant stations and the minor irritant of having to trigger the Geiger circuit to test for ore deposits. This feature saved on battery drain, but was damn inconvenient when the modern day prospector was strolling around the campground testing every likely looking rock and pebble. To make matters worse, the Geiger activation button

couldn't even be reached when the radio was being carried by its attractive cowhide carrying strap. A small inconvenience to a rugged prospector, but a royal pain to a weekend explorer.

All in all, Sylvania's U235 Prospector served its purpose of giving its owner a feel good perception, while increasing its sales in an era when tube portables were increasingly hard to sell (Sony's transistor radios were already beginning to take over the small portable radio market), and it wasn't as blatant in its marketing appeal as at least one radio that was to follow.

As the discovery of uranium deposits by better equipped professional prospectors increased it became possible to stockpile and test nuclear bombs. By the early 60's, America's fears mounted as other ominous changes were occurring; the Soviets had launched Sputnik, the Berlin Wall was up and the fear of full fledged nuclear attack was ever-present. In this country bomb shelters were for sale, and survival rations were being carried by some established food chains as well as being peddled by a new group of entrepreneurs. It was a different kind of era, giving rise to a new kind of consumer market.



In 1962, the Automatic Radio Company began selling the ultimate Cold War radio to this market. It was called the SAC-2, which stood

for Survival and Communications, although most people associated it with the more commonly known Strategic Air Command of the U. S. Air Force. Although the user's manual cover came with the obligatory beautiful girl in a swim suit, gone were the pretenses that this was a radio designed for any pleasure-filled moments. This was a radiation detector with a built-in radio, to be used in a concrete reinforced fallout shelter, not on the sandy beach!

One full page of its manual quotes government survival documents explaining how the human body will react when exposed to different levels of radiation, and explaining that this radiation detector radio displays the amount of roentgens per hour in the environment. Another full page is devoted to explaining the use and calibration of the radiation detecting unit - it came with a test specimen attached. No place in the documentation is there reference to using the radio for anything but survival. Clearly it was made to directly play into the fears created by the Cold war.

These radios represent an era that is fading from American's memory. Fortunately the Sylvania's U235 wasn't effective enough to spawn a number of imitators and Automatic's SAC-2 never had to be used as promoted, but both were marketed to play on the bases of America's fears and desires. In the current era of affluence, global economy, and pseudo-disarmament, these two models are truly collectable as a reminder of how a whole nation (and world) can be brought to the very edge of insanity.

Sources:

Automatic Radio Owners Guide. Automatic Radio Manufacturing Company INC. 1962.

Bassham, Randy. Radio Collector. Email Correspondance. May 2000.

Brett, Charles Dr. Colorado Radio Collector member. Email, telephone, personal interviews. May 2000.

Guth, Martain. Colorado Radio Collector member. telephone interview. May, 2000.

Schoo, Daniel. Electronics Design Engineer. Email correspondance. May 2000.

Sylvania prospert Owner s Guide. Sylvania Electric Products Inc. Buffalo New York. 1957.

Mark's Corner

Do the "Two Step" Regenerative Receiver

by
Mark Dittmar, CRC Member

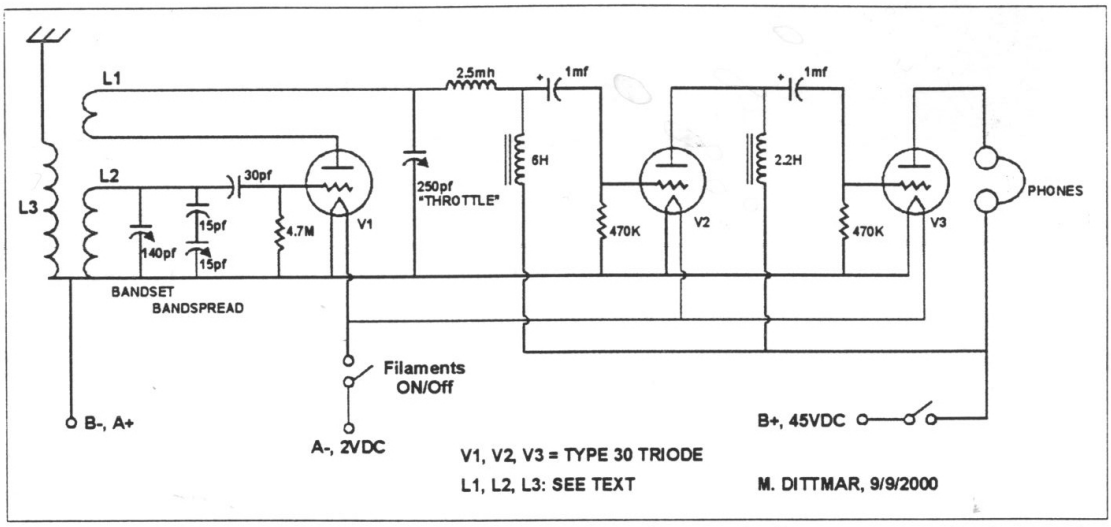
This month, I will be discussing the construction and design philosophy behind the classic "detector and two step" triode regenerative receiver with "throttle" condenser regeneration control. The "two step" refers to the number of audio stages in the circuit. This design performs amazingly well for so few parts, and if one follows a few basic design principles, a receiver can be built which will serve very well as a stable, selective and sensitive communications and shortwave receiver. The intent of this article is not so much as a step-by-step construction article, but as a set of guidelines to get the most performance out of this simple design. If you have never built one of these things, I encourage you to give it a try - they can be excellent-performing receivers, and besides, they look neat. Of course, they can be built for the AM BCB, but the design really "shines" when used at HF as a communications receiver.

If one looks at QST (amateur radio) magazines of the late 1920s and early 1930s, or any of the early shortwave magazines or handbooks, one finds countless variations of the triode regenerator. The classic article on this design, for amateur communications use, appears in the March 1928 issue of QST, "All About the Tube Base Receiver", by P.H. Quinby, 9DXY. It also appears in the second edition (1929) of Sterling's Radio Manual. Many of the principles of good regenerative receiver design can be gleaned from these sources.

A schematic of the three tube regenerative receiver that I built is shown on page 14. This design is a compromise - I wanted to be able to use the receiver for both amateur radio communications and short wave listening. If your intent is solely SWLing, the design as presented in the schematic, with plug-in coils for changing bands,

will work great. For amateur use, there are a number of details that can be made to enhance its performance, but will make it less convenient as a SW receiver. I will explore this in more detail below.

The tubes I used in my receiver were type 30 filamentary cathode battery triodes. These 4-pin tubes run on 2 VDC and 60 ma for the filaments. These are my favorite play triodes due to their small filament current consumption, though they are starting to get a bit expensive. Other similar tubes are the 6-pin 19 (basically two 30s in one envelope), the 1H4G (octal equivalent of the 30) or the 1G4 (1.5 VDC filament). 01As would work fine here too. Of the indirectly heated types, I suggest the 27, 56, 76, 6C5, 6SN7, 37 etc. They will all work, taking into account the proper filament requirements. Regardless of tube, I always use battery power for BOTH the filaments and plate voltages to reduce the possibility of hum, hence my preference for variants of the type 30. More than about 45 VDC of plate voltage will not be required for this kind of design thereby simplifying the power supply (I use a string of five 9 VDC batteries wired in series for my plate supply). For a filament supply, two 1.5 VDC series-connected D-cells in series with an appropriate dropping resistor supply the 2 VDC filaments.



The grid and tickler windings of the main coil, L2 and L3 in the schematic, set the frequency range and regenerative feedback for the receiver. Since I wanted a general coverage receiver, I wound my grid and tickler coils on tube bases from defunct 4-pin tubes (these are about 1.25" in diameter). This allows for fast and simple frequency range changes. If you don't have any old tube bases handy, a source of real

phenolic plug in coil forms is ARL-USA, in Cutler, IN.

Here are the coil specifications used in my receiver and the approximate frequency range covered:

Coil 1: 50 turns for the grid coil (L2 in the schematic) and 15 turns for the tickler coil (L1 in the schematic). The two windings are separated by about 1/8 inch. Approximate frequency coverage: 1.43 - 2.66 Mhz.

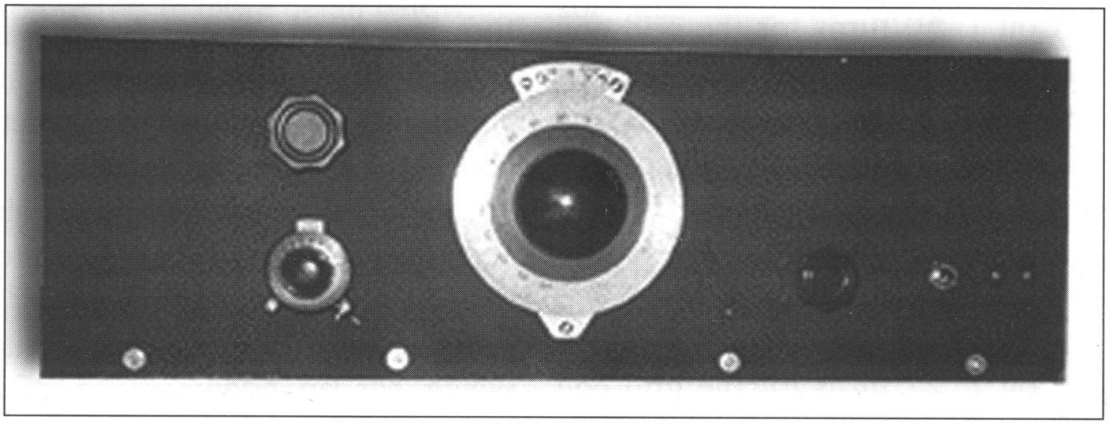
Coil 2: 27 turns for the grid coil (L2 in the schematic) and 8 turns for the tickler coil (L1 in the schematic). The two windings are separated by about 1/8 inch. Approximate frequency coverage: 2.1 - 4.5 Mhz.

Coil 3: 10 turns for the grid coil (L2 in the schematic) and 3 turns for the tickler coil (L1 in the schematic). The two windings are separated by about 1/8 inch. Approximate frequency coverage: 6.0 - 9.0 Mhz.

As you can see, these coils will cover the 160, 80, and 40 meter amateur bands, as well as many of the standard shortwave bands. For the AM BCB, try 75 - 100 turns or so for the grid coil. These specifications are useful as a guideline. A methodology for setting the tickler windings for optimal regenerative feedback and ease of control with the throttle condenser will be described further on.

Coupling of the antenna to the grid-tank circuit is through L1, a 1 turn link of #14 AWG house wire, concentric with the plug-in coil and about ¾" away (total diameter about 2.75"). Tuning is accomplished via a 140 pf variable "bandset "(coarse tune) capacitor, in parallel with a 15 pf "bandspread" (fine tune) capacitor which has an additional 15 pf in series with it to drop the maximum bandspread capacitance range to 7.5 pf. I used a large National 5:1 velvet vernier for the main (bandspread) tuning dial. A smaller vernier dial was used for the band set. Vernier dials are key to easy tuning of a regenerative receiver. The grid leak resistor is a 4.7M unit, and the grid capacitor is a 30 pf silver mica. The throttle condenser, which acts as a variable RF bypass to control the regeneration, is a 250 pf max air variable. The 2.5 mH RF choke after the throttle cap is to keep RF out of the final audio stages. The detector is coupled to the first AF amp tube with a 6.4H choke and 1 uF capacitor. This stage is coupled to the following audio stage via a 2.2H choke and 1 uF capacitor.

The headphones (the old-fashioned high impedance variety) are in series with the plate and B+ of the final 30 tube. I used those values of chokes only because they were on hand - anything from 5 H on up will work just fine, and the audio coupling capacitance can be anywhere in the 0.1 to 1 uF range or better. It is entirely non-critical.



I built the whole thing up on a spare piece of particle board I had lying around, 18" wide by about 10 " deep, and used a piece of 1/16" thick steel plate, 18" long by 6" high, as my front panel. L-brackets were used as supports for the variable tuning capacitors. All ouside connections to the circuit are made through Pfanestock clips. The whole assembly is very solid. Pictures of the receiver are shown above and on page 18.

This receiver seems to work quite well, and is quite stable and sensitive. I have used it on numerous occasions for amateur CW communications, as well as general band-surfing. Now that I have described my receiver, I would like to offer a few general recommendations for successful regenerating:

Power Supply: Use battery power whenever possible for both filaments and plate voltage. Note in the circuit diagram the connection of the filament A+ supply to the plate B- supply. This is important in directly heated triode regenerative or grid-leak detector circuits. If you are using indirectly heated cathode tubes, this does not matter.

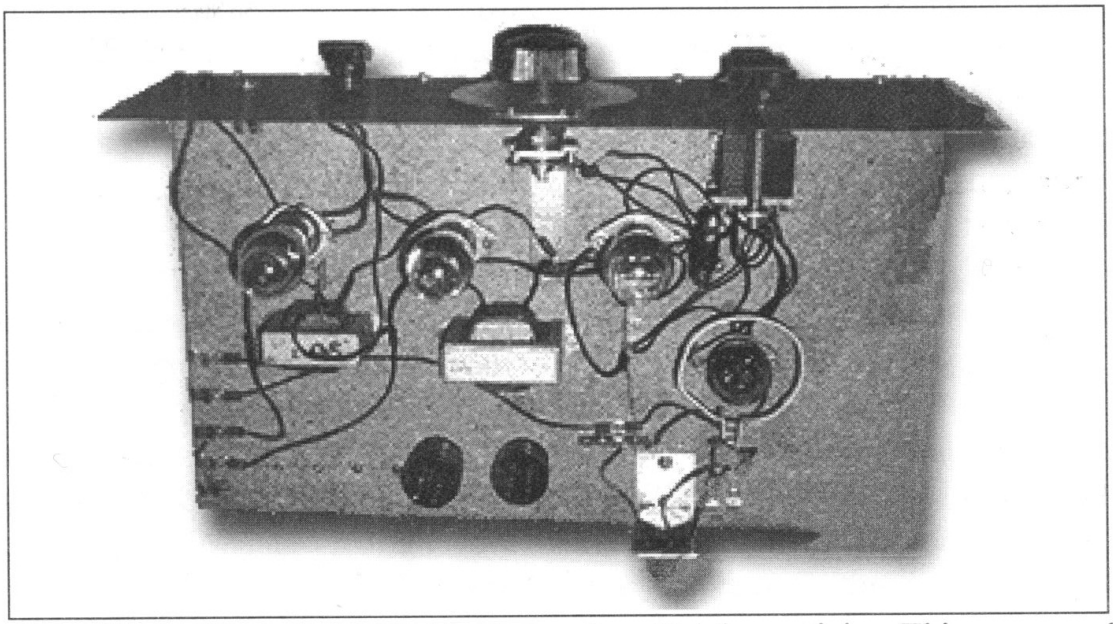
General Construction: Build solid. The circuit is basically a VFO (variable frequency oscillator), so for stability purposes, you don't want things jiggling around. It will lead to annoyance and frustration. Large solid wiring is nice. Use a grounded metal front panel. If you use a non-metal front panel, put a sheet of metal behind the front panel and connect it to circuit

ground. This will reduce or eliminate the effects of hand-capacity, whereby the frequency changes as you move your hands toward the tuning dial. Keep the tank circuit at least 6" or so behind the front panel. Use vernier dials for tuning. At HF, the tuning rate becomes too fast for a simple direct drive of the tuning capacitor. This is especially true if one is trying to tune in a CW or SSB signal. On the variable capacitors (both tuning and throttle), one end is shown connected to ground. Make sure this grounded end is the rotor.

Antenna Coupling: Keep it loose. This means a 1 turn link for inductive coupling, or a tiny, tiny 1 -5 pf cap connected between the antenna and tank circuit for capacitive coupling at HF. You could use a 1-10 pf variable cap here instead of the link, and arrange for the coupling to be varied from a front panel control. The regenerative detector is amplifying the signal many thousands of times, so tight coupling to the antenna is not really required. If you can arrange for moving the link up and down to vary the coupling, that is even better. Loose coupling dramatically increases receiver selectivity, and the receiver is better-behaved. If you build for the AM BCB, you can use more coupling, but I don't find it necessary. If properly built, these receivers will work on a short indoor antenna just fine, especially for SWLing.

Another reason to have loose or variable coupling is for better dynamic range. Strong adjacent signals will overload the detector, blocking out the weaker station you might be trying to copy. Loosening up on the coupling will help in this respect.

The tank circuit, L/C ratios, and setting the tickler windings: If you follow the winding specifications as outlined above, the grid coils should get you approximately in the frequency ranges stated. If you have a grid dip meter, you can connect a tuning capacitor in parallel with grid coil and measure the resonant frequency to set the number of turns exactly where you want them. On the tickler windings, the exact number of turns may have to be fiddled with. On a triode, the number of tickler turns should normally run about 10 to 20% of the grid coil turns. Always use the minimum number of turns of tickler winding to get good regeneration. To set the number of turns, start with say 20% of the number of turns on the grid coil. Set the throttle capacitor to



somewhere around its midpoint, and set your tuning capacitor to cover the high end of the frequency range you are interested in. Fix your plate voltage at your chosen value - 45 VDC is a good voltage to use on triode regenerators. Now adjust the number of turns until you achieve smooth regeneration and entry into oscillation around the midpoint of the throttle capacitor. When the regeneration control is right, the entry into oscillation should just be audible upon adjusting the throttle past the critical point. Conversely, it should come out of oscillation with a *soft* "plop" sound. If it "plops" with a hard sound both into and out of oscillation, the throttle control is too sensitive, so use less tickler.

For amateur radio use, a somewhat different philosophy is used, and this approach is taken in the Quinby article. This approach uses the LARGEST number of coil turns possible and a small tuning capacitance (high L/C ratio). This presumably lowers the loading effect on the tank Q, and generates a larger signal voltage across the grid circuit. So, for this approach, one could use the following coil / capacitance combinations for the 160, 80 and 40 meter amateur bands:

160 m: about 80 turns on a 2" diameter former
80 m: about 40 turns on a 2" diameter former
40 m: about 20 turns on a 2" diameter former

These coils used in conjunction with a small tuning capacitance of say 25 pf (10-15 pf tuning cap with perhaps 10-15 pf of trimmer

capacitance to set the band edges) should work OK, and cover most of the above amateur bands. Some trimming and tweaking will be required. Again, a vernier dial is a must. There is no bandset capacitor, and the tuning range is limited to a few hundred khz or less.

One other thing - if it just won't oscillate, the tickler windings may need to be reversed. Or, consult one of my previous columns where I have shown the proper way to connect the grid and tickler windings in a regenerative detector.

The grid leak / grid capacitor: Generally, you want to use a very high value of grid leak resistance and the smallest practical value of grid capacitance. Typical grid leaks are in the 1-10 Megohm range. Grid caps can be anywhere in the range of 10-250 pf. Experiment here. For amateur radio use, grid leaks in the range of 10-20 Megs and grid caps in the 10-20 pf are recommended. This effectively isolates the tank circuit from the tube (meaning lightly coupled), thereby maximizing selectivity.

The throttle capacitor: Here, use a fairly large value of throttle capacitance - 250 pf to 365 pf is about right. This makes setting the regeneration action much smoother. 365 pf is probably better. Many of the older designs show a 150 pf or less throttle. This makes regeneration control too touchy and harder to tame..

Audio circuit considerations: Impedance coupling from the detector to the first audio stage and from the first to the second audio stage via choke and capacitor is usually the easiest to accomplish. As stated above, anything from 5 H on up for the chokes and 0.1 to 1 uf on the coupling cap will work well. Most of the designs seen in the older publications show audio transformer coupling, generally 1:3 - 1:10 impedance ratio transformers. These work well too if you can find them. I find choke /capacitor coupling to be easier to accomplish since these parts are readily available.

In this style of regen, there is usually no volume control, that is, the audio stages are run wide open and some means of varying the RF input to the detector is used. As pointed out above, this has the additional benefit of helping with selectivity and prevention of detector overload. For SWL purposes, the two audio stages may be too much. One possibility is two dispense with the second stage entirely, or use a jack between the first and second stages, like in many of the early TRF sets. This allows

one to plug in their phones to either the first or second audio stage. I find that for weaker CW signals, the second audio stage is of benefit. If efforts were made to have a variable antenna coupling, this would be another means of adjusting the volume.

That just about does it for this month's column. I hope that the information presented here will be of use in your regenerative receiver projects. Good Luck! If you have a question or would like to otherwise correspond, my e-mail address is "dittmar@bwn.net."

73, Mark AB0CW

CORRECTION !

In the July/August 2000 issue of the FLASH, I presented a design for a power supply for the "farm set" radio. There is a mistake in the schematic which may cause problems if more than about 250 mA is drawn from the filament circuit. The input capacitor to the voltage regulator is shown as a 47 uF - this should be a **4700 uf** capacitor. With the smaller value of capacitor in the input circuit, the DC voltage to the regulator may fall below the regulator's "dropout" voltage when larger filament currents are drawn, particularly with a 6.3 VAC transformer. The output voltage will then NOT be regulated at 1.25 VDC, but will begin to fall below this value as higher currents are drawn. Also, in the high voltage circuit, there is a resistor between the two filter capacitors. It was put in there for hum suppression. It may also cause poor voltage regulation if too much current is drawn. I found that drawing more than 20 ma or so will cause the regulation to suffer greatly. Remove this resistor and 40 ma can be drawn with the transformer shown and still maintain regulation.

Collector Books for Sale

CRC Members get specially reduced prices on popular collector books. Place and receive your order at club meetings. If ordered for mail shipment add $1.75 postage for each book ordered. For information and ordering: Charles Brett, (719) 495-8660, brett3729@aol.com. ***This listing has item and price updates - void all other listings.***

	Retail	Club
RADIOS, (GENUINE PLASTIC) OF THE MID CENTURY **Jupp & Pina, hard bound, 219 pgs, 1998 PG, 450+ color pics**	**$39.95**	**$28.00**
ANTIQUE RADIOS, COLLECTOR'S GUIDE - 4th EDITION **Bunis, 1997 values, revised & updated, new photos, 248 pgs**	**$18.95**	**$15.00**
GUIDE TO OLD RADIOS, POINTERS... - 2nd EDITION **Johnson, 277 pgs, 1995-96 prices**	**$19.95**	**$15.00**
ANTIQUE RADIO RESTORATION GUIDE - 2rd EDITION **Johnson, 144 pgs, repairing, refinishing, cleaning**	**$14.95**	**$12.00**
RADIO, EVOLUTION OF THE - VOLUME ONE **227 pgs, 118 in color, More than 800 radios pictured and priced for 1992, pictures from the collections of CRC members Jim Berg and Johnny Johnson**	**$22.95**	**$18.00**
RADIO, EVOLUTION OF THE - VOLUME TWO **All different from Volume One, 226 pgs, Color, Radios of the 1920s to 1960s, with 93-94 values, pixs from CRC member Jim Berg**	**$24.95**	**$19.00**
TRANSISTOR RADIOS, COLLECTOR'S GUIDE VOL II **Bunis, 1996 prices, Full Color**	**$16.95**	**$13.00**
ZENITH TRANSISTOR RADIOS, 1955-1965 **Smith, 1998 PG, 160 pgs, 226 color pics, info, descr.**	**$29.95**	**$22.00**
THE ZENITH TRANS-OCEANIC (THE ROYALTY OF RADIOS) **Bryant and Cones, 160 gps, 1995**	**$29.95**	**$22.00**
ZENITH RADIOS THE EARLY YEARS 1919-1936, Cones **1997-98 Price Guide, 223 pgs, 100's Photos, Desc., Hist.**	**$29.95**	**$22.00**
RADIOS BY HALLICRAFTERS, revised 2nd edition **Dachis, 1999 values, 220 pgs, 1000+ pics, id's, history**	**$29.95**	**$22.00**
CLASSIC TV'S, PRE-WAR THRU 1950'S **86 pgs, color & b/w pics, descriptions, etc.**	**$18.95**	**$15.00**
Machine Age to Jet Age, Radiomania's Table Radio Guide 'III, 33-'62 **Stein, 256 pgs, 100's of b/w photos**	**$29.95**	**$24.50**
TRANSISTOR RADIOS, 1954 TO 1969 **Norman Smith, with prices, 160 pgs, 1000 photos, 1998**	**$29.95**	**$22.00**

PHILCO RADIO: 1928 - 1942
Ramires & Prosise, 160 pgs, 828 pics & drawings, 1993 — $29.95 $22.00

RADIO AND TV PREMIUMS
Jim Harmon, 256 pgs, 200+ photos, 1997 — $24.95 $19.00

RADIO MANUFACTURES OF THE 1920'S VOL I
Alan Douglas, 225 pgs, 1988 — $24.95 $19.00

RADIO MANUFACTURES OF THE 1920'S VOL II
Alan Douglas, 266 pgs, 1989 — $29.95 $22.00

RADIO MANUFACTURES OF THE 1920'S VOL III
Alan Douglas, 285 pgs, 1991 — $29.95 $22.00

CRYSTAL CLEAR VOL 1
Maurice Sievers, 282 Pgs, 1991 — $29.95 $22.00

CRYSTAL CLEAR VOL 2
Maurice Sievers, 252 Pgs, 1995 — $29.95 $22.00

RADIO TUBES AND BOXES OF THE 1920'S
George A Fathauer, 112 Pgs, 1999 — $26.95 $20.00

70 YEARS OF TUBES AND VALVES, 2ND EDITION
John Stokes, 264 Pgs, 1997 — $29.95 $22.00

RADIO DIAGRAM SOURCEBOOK
Richard Gray, 264 Pgs, 1996 — $18.95 $15.00

THE RADIO COLLECTOR'S DIRECTORY AND PRICE GUIDE, 2ND ED.
Robert Grinder, 524 Pgs, 1995 — $26.95 $21.00

COLLECTOR'S GUIDE TO VINTAGE TELEVISION
Durbal & Glenn Bubenneimer, 200 Pgs, 1999 — $15.95 $13.00

NOVELTY RADIOS, VOLUME 1
Marty Bunis & Robert Breed, 223 Pgs, 1995 — $18.95 $15.00

NOVELTY RADIOS, VOLUME 2
Mary Bunis & Robert Breed, 199 Pgs, 1999 — $19.95 $15.00

COMPLETE PRICE GUIDE TO ANTIQUE RADIOS: PRE-WAR CONSOLES
Mark Stein, 235 pgs, 100's of b/w photos — $29.95 $22.00

"The Open Trunk" Classified Advertisements

◆ See IFC for ad details ◆

WANTED: 1940 Deutsche Arbeits Front (DAF) 1011 • Radione1939 portables R-2, & R-3 • Any VE-301 • Any Japanese 1930's radio • Zenith T-O bomber or sailboat • Hoffman "Nugget" sub min tube pocket radio • WWII axis powers clocks or watches. Will pay your price. Condition not important. **John A. Miner** (303) 759-9152 voice, (303) 759-5438 FAX hohum@uswest.net

---

FOR SALE: Reproduction Philco Cathedral cabinet parts. Front panels, rear arches, bottom moldings. Grandfather clock finials, colonial clock top trim and finials. Reproduction 90, 70 and 20 (std) cabinets. Other needs such as other style moldings from your sample. Inquire. **Dick Oliver**, Antique Radio Svc., 28604 Schwalm Dr., Elkhart IN 46517. (219)522-4516

WANTED: The female power (battery) plug for a Kemper portable K-52. Similar to octal except has 7 pins and two round locating pins (edge and center). • Knobs for a Crosley 601 bandbox. **Mark McKeown**, (303) 278-3908 mmckeown@tde.com

FOR SALE: • Zenith R-7000, the very last trans-oceanic made. Call for details. (303)730-8539

WANTED: Stewart-Warner model R-123 chassis, used in receiver models 1231 to 1239 (see Riders volume 6 page 6-2 for picture of chassis). • Chassis for AK 217, and Majestic 371. **Jerry Tynan**, (303)642-0553 jtynan@worldnet.att.net

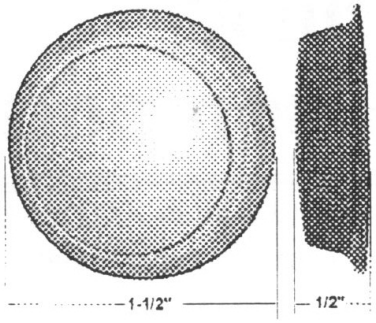
---

FOR SALE: Copper Rod, save $$$$$$, several diameters available to make your own soldering iron tips (or I can for you). • Radio repair and restoration service. **David Boyle**, 1058 Colt Cir., Castle Rock, CO 80104 (303)681-3258

WANTED: GE clock radios, models 935 & 936. **Tom Kelley**, 971-1/2 Pleasant St., Boulder, CO 80302 (303)444-1837

WANTED: Old horn speaker parts, drivers and incomplete units. Also, old light bulbs with tip and good filaments. **Charles Combs**, 508 E. Daniel St., Albany MO 64402 ph/fax (660)726-3038

WANTED: Crosley knob



Knob has brass female threaded mount
Wayne Gilbert (303)465-0883

WANTED: Mountain Dew BB-92 • Napoleon Cognac BB-93 • Peachtree Cream BB-97 • Scotch Seven BB-100 • Mr & Mrs "T" BB-106 • 7-UP Vending Machine • Pink Panther BB-390 • Battlestar Galactica BB-447 • Batman BB-353 • Mickey Mouse (Breed 1 Plt 115)
Ron Smith, 145 Carr St., Lakewood CO 80226, (303)274-7522

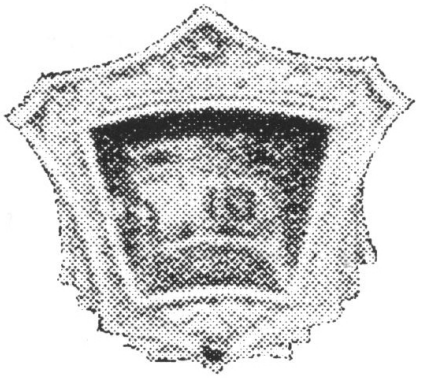
WANTED: Old Radio magazines for my research library in Antique Radio. Need pubs like Radio Design, Radio Age, and Radio Craft -1920's thru 1940's. Will provide home, or purchase singles or full sets at a fair price. Also interested in publications from various companies; Aerovox, RCA, Sylvania, Bell Labs, etc. Likewise, need old test equipment literature and manuals. **Charles Brett** 5980 Old Ranch Rd., Colorado Springs CO 80908 (303)495-8660

WANTED: 2nd I.F. Trnsfmr coil, Grisby/Grunow ch. 460. Goes in Majestic Century Six, models 461-463 Bunis I/pg95. This trnsfmr coil is secondary audio and AVC, with six leads. **Jay Kussman** 8023 Blucksberg Dr., Sturgis, SD 57785 (605)720-7519, nipper@rapidnet.com

---

WANTED: Telegraph/Morse keys, bugs, paddles and any books or documentation. **Robert Baumann**, (303)988-2089, rgbdenver@aol.com

---



WANTED: Escutcheon for a Jackson-Bell Swan cathedral - pictured here and in Bunis #4 page 116.

Ed Brady, 1333 White Rim Pl. NE, Albuquerque NM 87112 (505)292-048,cebrady2@yahoo.com

---

FOR SALE: Drake 2C rcvr. excellent condx $100 • Heath HW 100 Xcvr w/book $100 • HN-31 dummy load $20 • Eico HF 81 audio amp $20 • J-37 WWII key, $35 • CDE HAM M series 2 rotator, Just serviced $80 • TR-22 rotator $40 • 816 tube new in box $15. **Lys Carey** (303) 986-5420

FOR SALE: 4,600 Radio & TV tubes, ***New in original boxes***, $920.00 (.20 ea) Sold as LOT only. Approximate value of $20,000 if priced in "Antique Electronic Supply Catalog". **Norm Bernicky.** (719)550-5810, Colorado Spgs. norm@norbern.com

Colorado Radio Collectors
Antique Radio Club
5270 E. Nassau Cir.
Englewood CO 80110

Colorado Radio Collectors
Antique Radio Club

FIRST CLASS

The November meeting is on Sunday the 12th at 1:00 PM
VectraBank Building at Federal and Arkansas