



Volume 23, Issue 2

The March 11th meeting is at the Philip Miller Library in Castle Rock

March/April 2012

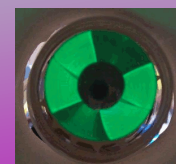
Dedicated to the Preservation and Education of Wireless, Radio, Television and Associated Equipment



SEEING - EYE - TO - EYE

“...for a better understanding”

By Dave Boyle CRC Member



Background

With the advent and growing proliferation of superhetrodyne radios in the 1930's a better way to “tune-in” stations was recognized, especially in higher priced models. Improper, off center frequency tuning can lead to distortion often not noticed by the listener.

Electron-Ray Tuning Indicator Tube

In 1935 RCA developed the “Magic Eye” electron-ray tube to aid in tuning radios exactly to the station frequency setting desired. This “eye” takes the guess work out of tuning

by providing a visual indication of when the radio is tuned in to the desired signal.

The earlier development and improvement of Automatic Volume Control (AVC) circuits (reference 1) allowed a portion of the generated AVC voltage be applied to a voltage measuring device such as a meter (too expensive!) or in this instance an indicating magic eye tube.

Original “G” tube style shape of 6E5 Magic Eye

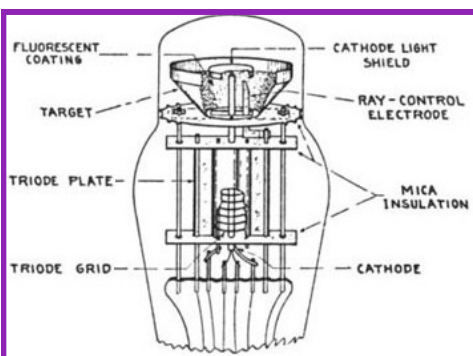


Figure 1
Magic Eye Tube Construction

How It Works

The electron-ray electrodes/elements are enclosed in a standard radio tube envelop. These various elements work together to give a visual indication of voltage variation. The cathode is mounted in a vertical orientation. Around the cathode is placed a funnel-shaped anode or *target* tapering downwards. The inner surface of the target is coated with a phosphor, *viz-a-viz* a cathode-ray tube (CRT), that glows when struck by an electron stream. Thus, electrons emitted by the heated cathode strike the inner surface of the target producing a green glow which appears as a ring when looking into the top end of the tube.

Between the cathode and the target is a vertical *deflector* electrode. If this deflector is at the same voltage potential as the target it will have little effect on the electron stream and the glow will be a complete ring. Reference Figure 2A. But if the deflector ring is less positive

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Do you want to see this issue in COLOR?
Join the CRC e-group—Contact Mark Dittmar for information

COLORADO RADIO COLLECTORS ANTIQUE RADIO CLUB

Founded October 1988
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Message from the President

Hello to all Club Members,

As I pen this message our club has just started the New Year with a great and quite successful meeting at the Littleton Bemis Library.

Good attendance with more than 40 members.

Our ambitious agenda included discussions on our "colorized" edition of the Flash. Rich Kuberski has been developing this for sometime and we are ready to have this version "on-line" starting with the March issue. It will be delivered via email to those of you that have joined the e-group. If you haven't joined, this would be a good reason to do so.

Contact Mark Dittmar via email for information on joining. To give you a chance to see this in color, we will try to send this out again to the e-group about March 18th.

Additional discussion centered on the upcoming March 25th show. Effort by various volunteer club members are underway. More on

this at our March meeting in Castle Rock.

Our January meeting "**Special Topic**" was "**Radios of Historical Interest.**" See photos elsewhere in this issue. Neil Gallensky capti-



vated our interest with several special edition Regency TR -1 transistor radios, one produced for 1950's Hollywood producer Michael Todd; then husband of Liz Taylor. Neil gave an interesting story behind these radios and how he

acquired them.

Several important subjects are addressed in this issue...I direct your attention and consideration to the subject described under "**HELP**" ... and do we need it as we approach the near future.

See you at the next meeting, Please do not hesitate to call/email me on any club or old radio questions...I'll do my best to help.

Stay Tuned,

David

Internet and email address are now live links, just click on them to use them.

CRC CONTACTS

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NOTE: at = @ in email addresses

Upcoming Events

2/14—Valentines Day
3/11—March CRC Meeting
3/25—CRC Show

Meeting Locations

(Unless noted otherwise)

Littleton	Castle Rock
January	March
May	July
September	November

CRC MEETINGS

Meetings are held on the 2nd Sunday of every other month starting in January (except May is 3rd Sunday) at 1:00 pm. The meetings consist of business, "show & tell", raffles, auctions, swap meets, technical discussions and other subjects of interest

CRC MEMBERSHIP

Annual membership in the CRC runs from July to June. Dues entitle members to attend meetings, "The Flash!" our newsletter, discount book prices, participation in our spring show and Fall auction. Current annual dues are \$12. New memberships will be prorated to the following June.

(Continued from page 1)

than the target an electric field is set-up between it and the target. This field repels a portion of these electrons flowing toward the target and thus a portion of the target in line with the deflector electrode will be cut off and that part of the target will not glow. Refer to Figure 2B.

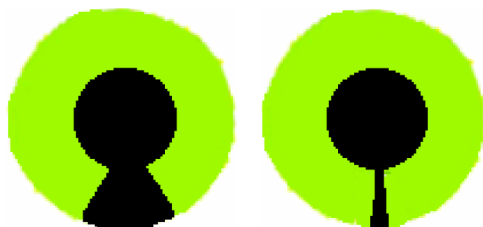


Figure 2A

Figure 2B

The Circuitry

For a more in-depth discussion of how the AVC voltage produces changes to the appearance of glowing magic eye tubes please continue reading and refer to Figure 3 below:

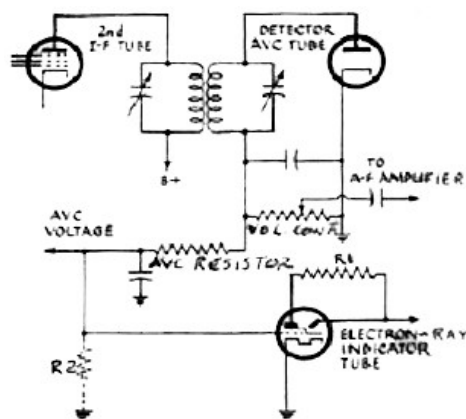


Figure 3A

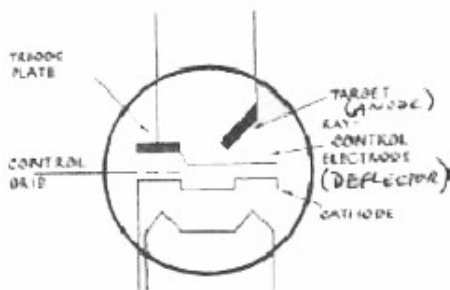


Figure 3B

The magic eye tube is normally biased so that the deflector electrode is sufficiently negative with respect to the target to cast a shadow of about 90 degrees (Figure 2A). This is accomplished by resistor R1, usually 1 megohm. This makes the plate of the triode less positive and, therefore, the deflector less positive than the target. As the signal is tuned-in the AVC voltage becomes more negative which makes the triode plate and deflector more positive which narrows the shadow somewhat proportional to the AVC varying voltage. Note in Figure 3 the symbol for the magic eye tube and that a triode is incorporated within the eye tube. The triode portion of the eye tube acts as an amplifier with its plate directly wired to the deflector/control electrode. Small changes in AVC voltage applied to the grid cause more pronounced changes in the eye's shadow.

Common Problems Possible Solutions

1. Eye tube appears to be dead, test tube, if ok, then measure B+ on target/anode. Should be approximately 200-250VDC. Also verify filament is lit up.
2. Radio tunes in well and sounds as it should, the eye tube glows well but does not indicate any change in shadow size. Most likely failure in the (typically) 1 megohm resistor between the target plate and the triode plate. Oftentimes this resistor is located inside the plastic tube socket. The resistance can be verified with the ohmmeter test leads directly to the correct pins in the socket....pins 2 and 4 for 6E5/6G5 and similar based eye tubes. Have fun replacing this resistor!....or do

the replacement external to the socket, like wrap the resistor leads around the eye tube pins up close to the tube base. Reinsert tube and hope for the best.

3. Eye tube does not indicate much sensitivity or shadow change between weak and strong stations.

* First verify that the tube tests good...or substitute a known good tube.

* Check resistance of R1 as in # 2 above.

* Measure AVC voltage as a function of weak versus strong stations on the AVC bus, reference Figure 3A. This may lead you to verify all AVC network resistors are still the correct values. Replace as required. BTW, the AVC voltage generating resistor is usually a high value like 750Kohm to 1.2 megohm. Refer to the radio's schematic.

* Replace all capacitors in the AVC network, both upstream and downstream of the "AVC resistor." Just a little leakage to ground will destroy AVC voltage response.

* Greater shadow response can be realized by driving the eye tube directly from the detector side of the AVC network. This has to be done by experimentally determining the value of control grid bias resistance and adding a capacitor to ground to filter out any audio signal. ...but this really exceeds the scope of this article.

* Shadow disappears entirely and shows slight overlap when strong stations are tuned in. This can be remedied by adding a voltage dividing resistor into the eye tube grid circuit, reference Figure 3A, R2, "dashed line" resistor. Value must be determined experimentally.

(Continued on page 4)

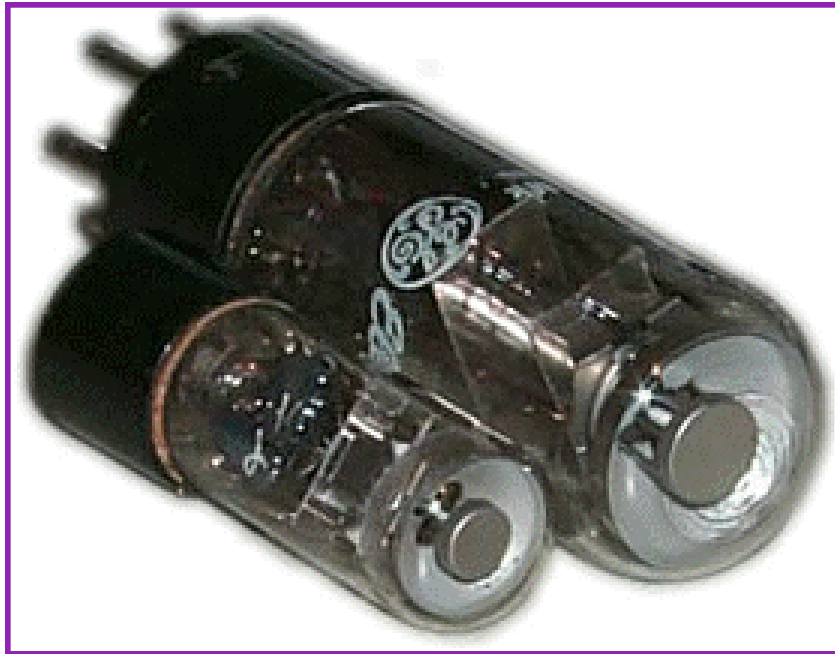
Tube Substitutions

* A number of eye tubes can be interchanged. The most common are between 6E5, 6G5, and, 6U5. The 6T5 annular shadow tube can also be interchanged with the 6E5, 6G5, and 6U5, as above. I have found 6T5's in Zenith radios but the substituted tubes are not quite as responsive.

* Reference the Eye Tube Chart in Figure 4 as a guide.

* The less expensive 1629 eye tube can be used in lieu of the 6E5 "series" and adapter sockets are available that convert

the filament voltage to 12.6 volts and change the basing to octal. Also can use a separate filament transformer and new octal socket.



Electron-Ray Tubes

A number of electron-ray tubes were developed from the mid to end of the 1930's. The following table is a summary of American styles and some of their characteristics:

References

1. Volume Control and AVC Circuits, FLASH Article March, April 2008, by David Boyle.
2. RCA and GE Tube Manuals, various editions.
3. Tube Lore; book, by Ludwell Sibley.
4. Seventy Years of Radio Tubes and Valves ; book, by John Stokes.

No.	Year	Pins	Filament Voltage	Notes
6E5	1935	6	6.3	RCA, The first electron-ray tube, Magic Eye
6G5	1936	6	6.3	RCA Variable mu (gain) more sensitive
6N5	1936	6	6.3	RCA 0.15 amp. fil. current for portable radio
6T5	1937	6	6.3	Raytheon, Sylvania, etc. annular shadow
6AF6/6AD6	1938	6	6.3	RCA, dual shadows, 6AF6 is quite short (small)
6U5	1939	6	6.3	RCA similar to 6E5
6AB5	1938	6	6.3	RCA similar to 6N5
2E5	mid-1930's	6	2.5	RCA for aftermarket installation in older radios
2G5	"	6	2.5	
1629	WWII	Octal	12.6	RCA military use....# VT 139
6AL7	1950	Octal	6.3	RCA, for FM radio use, dual rectangular shadows

Special Topic for March's meeting

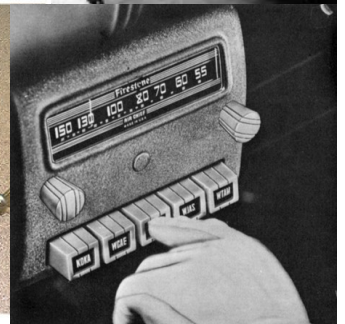
My First Radio/My First Collectable Radio

If you still have it, bring it along and tell us about it!



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**Yes Sweetheart,
I mean
YOU!!!**



CRC NEWS

Congratulations to:

Mark & Wendy Kuligowski

By Rich Kuberski

The new **SHOW COORDINATOR**

Team for the annual CRC Show.

Duties of the show manager:

- * Be at the hotel as soon as show participants and get in
- * Coordinate with the Vintage Voltage Expo operator; tables/chairs, costs, power
- * Check that the show tables are laid out in an appropriate style
- * Coordinate getting show items for the various categories displayed together
- * Check that category signs are displayed
- * Check that the show ribbons are available
- * Coordinate info and last minute decisions

The “go-to” guy & gal

Lets give them all the help they need. Be early, be prepared and place your exhibits in the correct place.

Computer Guy

By Rich Kuberski

To paraphrase Larry Weide,

HELP!

Yes, after only two decades of performing the very critical computer services that make our show and auction operate very smoooooothly, Larry would like some help. Well, I don't blame him.

Although he says that he enjoys what he is doing, the club is at risk of a giant problem should he no longer be able to perform this task.

As he noted, he is willing to continue for a while, **but we need someone now** to become a partner to learn the software and eventually take over these duties. I am sure that we have numerous people sitting in the audience with database skills that could easily jump into this project.

I don't think that there is anyone that would not agree that this is a critical task and we need skilled help to ensure that the club has someone that can perform these duties.

Imagine for a moment, if you can, the chaos that would ensue if Larry was not able to attend either the show or auction. Who would want to pick up a pencil and take over the job that he performs with electronic magic? Not me, how about you? So, if you have the desire and are computer literate, step up and contact Larry. He will provide all the training that you need and will be there to help when you need it.

Larry also mentioned that the sound system that he uses is his own property. I would suggest that the club either purchases his equipment, if he is willing to sell it, or find substitute equipment that can be used.

It's Show Time

This year, the **Vintage Voltage show will start at 11:00**. However, we have decided that the **CRC show activities will start at 8:00**. This will give us time to get organized, do our voting and get ribbons in place by about the time the VVE starts. **See you there.**

2012 Show - Best Restoration Award

Last year we attempted to introduce a new method of identifying restored entries to aid judging. Few people read the notice on the registration table and the process was unsuccessful. If your entry has been restored, immediately affix a colored dot to the registration tag as they are given to you by the computer support team.

Documentation - including photos and/or a written description of the restoration work performed - significantly increases the chances of your efforts being recog-

NOTICE:

Charlie Brett loaned his collection of back copies of the Flash so they could be scanned. He would like these returned, but can't remember who he loaned them to.

Larry Weide and Rich Kuberski are planning to create a complete electronic copy of all back issues of the Flash and include it on their CRC Show video disk. They will need these copies to complete this project.

Please contact Charlie if you have these copies. 719-495-8660

Treasurers Report

By Mike Cook

The CRC has a paid membership of 93 and as of January, 8th 2012, \$3,612 in the bank and cash on hand. Our first significant expense will be the upcoming CRC Show which will be \$500.

2012 Colorado Radio Collectors Annual Show and Competition

WHAT? It's that time again?

Yes friends and neighbors, it IS that time again. The **2012 CRC Annual Show** in conjunction with **Vintage Voltage** is upon us. By the time you receive this issue you will only have two weeks to complete the work on your entries.

This year, the Special Category is

RCA Radios

I believe this is the 5th year that we will be joining with the Vintage Voltage Show at the Ramada Plaza Inn at I-25 and 120th Avenue in Northglenn. Last year the turnout was tremendous with perhaps as many as 2,000 people going through the facility.

This is your chance to strut your stuff. Bring your cherished radios to show everyone and see what others have brought. Although there will be a featured category, don't forget that all of the standard categories will still be available. We have yet to run out of space for the display of radios, so dig deep and bring a bunch of them along.

These are the judging categories:

Accessories
Bakelite
Battery - 1926-1929
Catalin
Cathedral
Classic Audio
Communication Gear
Console - Full Length
Console - High/Low Boy
Crystal Set
Homebrew

Kit
Metal Box - 1920's
Metal Case
Military
Novelty - Transistor
Novelty - Tube
Plastic - Tube
Portable - Pre 1939
Portable - Post 1938
Pre 1926
Speakers

Specialty
Television
Test Equipment
Tombstone
Transistor
Tube/Parts Display
Wooden - Line Powered
No Judging - Display Only
Best of Show
Best Restoration
Peoples Choice

2012 Colorado Radio Collectors Annual Show and Competition

March 25, 2011 Ramada Plaza Convention Center I-25 at 120th Avenue in Northglenn.

The Special Category this year is:

RCA RADIOS

Record the information about your show entries on this form and give it to Larry when you register. *Registration deadline 9:30.*

Name _____ Phone # _____

Brand _____ Model _____ Year _____ Category (listed above) _____

1	_____	_____	_____	_____
2	_____	_____	_____	_____
3	_____	_____	_____	_____
4	_____	_____	_____	_____
5	_____	_____	_____	_____
6	_____	_____	_____	_____
7	_____	_____	_____	_____

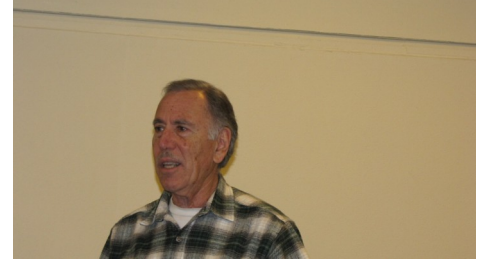
Photos from September 11th Meeting at the Philip Miller Library in Castle Rock



A great turnout for our meeting at the Bemis Library



New President Dave Boyle kicks off the meeting



Larry Weide discusses need for "new blood" for computer duties



Mark & Wendy Kuligowski, our new CRC show Coordinators



Bart Whitehouse with restored DeForest MR-6 from 1922



Neil Gallensky with Regency TR-1 owned by Mike Todd (Elizabeth Taylor's husband)



Barney Wooters with RCA Radiola #2 from 1923



Marty Phillips with Philco's first radio model 511 from June 1928



Tom Kelly with 1945 Telecron the first clock radio



Tom with first GE branded clock radio, sold 1946



Merrill Campbell with 1948 Silvertone radio he recently restored



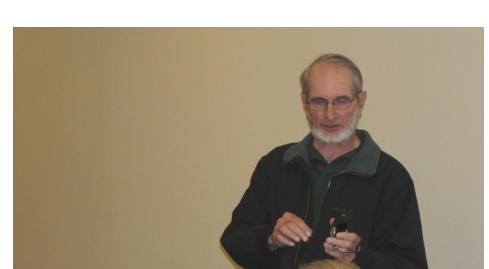
Merrill showing AK 40 he recently restored



Rich Kuberski with his 1942 Zenith Trans-Oceanic



Tom Pouliot showing his radio with early coherer



Wayne Russert with 1935 Pakete Radio



The Open Trunk

Member submitted advertisements



WANTED: Buy/Sell/Trade: "Heavy Metal" communications gear, telegraph related items, vintage calculators & micro-phones.

Robert Baumann, 303-988-2089
HQ180A@aol.com. (07/09)

REPAIR SERVICE:

Radio repairs for club members. Reasonable rates. Good references.

Call David Boyle
303-681-3258

11/09

For Sale: by Dave Boyle

All of the following older but "classic" radio and TV repair instruments have been expertly refurbished, repaired, and calibrated as appropriate.

All Instruments come with test leads, as required and most have manuals. Prices might be negotiable.

- 1) Heathkit TV Alignment Generator; IG-52. \$65.00
- 2) Heathkit Capacitor Tester, C-3. Also checks leakage, power factor, and resistance. \$65.00
- 3) Eico Model 324 Signal Generator. \$60.00
- 4) Precision Apparatus Company (PACO) Model E-400 Sweep Signal Generator. \$55.00
- 5) Eico Model 425: 5" oscilloscope. Two to choose from, both rebuilt, one with new CRT. Perfect for old radio and audio repair work. \$45 and \$65 respectively. With manual.
- 6) RCA Master Volt ohmyst common 7" meter with new leads and manual \$75.
- 7) RCA RF Signal Generator, standard Functions IG-102 \$35
- 8) Heathkit Model IG-102 Signal Generator 5 bands, audio out put with leads and manual \$40

Call
David Boyle, 303-681-3258 5/11

Wanted

Knight KG-2000 Manual (copy okay)

Robert Schineller 303-682-1949
Schineller@comcast.net

Many old Tubes for Sale

Try me before you order over the internet and save shipping.

01A, 24A, 27, 35/5, 47, 71A, 80 and many others. All tested on my Hickok TV-7/DU tester.

Mike Cook 303-471-9596

WANTED DEAD or ALIVE: My first transistor radio. Realtone 9 Transistor model TR1948 or any that look the same (see photo). Any condition or color so long as innards are intact.

Please contact Dave Laude at
 719-495-3800 or dlaudel@msn.com



Custom Embroidered CRC LOGO on Shirts and Hats

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- Choose the colors, up to four
- Include your name under the LOGO - a \$1 option
- Provide your own garment, or...
- Choose from a wide selection in a catalog; www.imprintswholesale.com

For orders, catalog prices and further info contact the seamstress directly.

Judy Houser
 (303) 771-3577
 Highlands Ranch, Colorado

Give me some help

By Rich Kuberski

Have you got a project or story to relate. Send it in so it can be used in the Flash.

This is our publication, lets fill it with the things that interest us. I can usually fit something small in most any issue. Larger stories needed too.

SUBMISSION OF ARTICLES AND ADVERTISEMENTS

Classified Ads for The Open Trunk and articles of any radio/electronic or historical related subject to be published in the Flash are encouraged and welcomed. The article(s) should be submitted in Microsoft Word, RTF, or as text cut/paste into your email. Submit to Steve Touzalin by email at: stevetou@comcast.net or by postal mail to 417 So. Queen Circle, Lakewood CO 80226.

Formatting isn't necessary, but if you do, set the font to Times New Roman, size 10, left justified. If you have graphics (.jpg files) to be inserted, please name them and be specific about how you would like them placed. We will do our best based on space limitations.

Directions

From I-25: Take the Plum Creek Parkway, exit #181

Turn East onto Plum Creek Parkway.

Turn Left (North) onto S. Wilcox Street and continue north 2 tenths of a mile.

The Philip S. Miller Library is on the east side of the street at 100 S. Wilcox St.

The building is towards the back of the parking lot, past the Dairy Queen.

Special Topic for March's meeting

My First Radio/My First Collectable Radio

If you still have it, bring it along
and tell us about it!



Colorado Radio Collectors
Antique Radio Club
417 S. Queen Cir.
Lakewood CO 80226

FIRST CLASS MAIL

NOTICE

Hey, it's only 2 weeks
until the next CRC Show/
Vintage Voltage.

Mark your calendar: 3/25

This is one of the premier
events of the club.

Don't miss it.
And, do participate.
See you there