



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

Volume 26, Issue 5

The September 13th meeting is at the Miller Library in Castle Rock

Sept./Oct. 2015

Hickok 539B/C Tube Testers and me By CRC member Bill Eccher

I'm sure most members are aware Hickok was the leader in tube testers. The Hickok/Barnhart patent of 1934 for measuring Transconductance was the key to their success. The basic circuit required only a meter, one capacitor, a transformer with dual plate, signal and filament windings along with the Type 83 mercury vapor tube, which RCA designed in 1933. This tube was essential for the circuit to work, since it not only needed rectification, but a constant voltage drop across the elements over a wide current range. This simple reliable circuit met the requirements for the Military, Western Electric and most of the commercial tube equipment manufacturers along with the more affluent Radio and TV shops of that time. A later patent where the seven tube elements were directed to the tube socket pins through seven element labeled selector switches. Two alpha followed by five numbers just like the phone numbers were in those days sealed their leadership in tube tester design.

My introduction to the Hickok tube tester design came in 1951 while serving in the USAF. It was the model I-177 that worked well, but later on new equipment began using the miniature tubes that required the MX-949 adapter and that was slow and difficult to use. Later in the 50's it was with the Colorado State Patrol and the model 533 and finally with the Burroughs's 205/220 tube type main frame computers using the model 539B.

Now fast forward to the 90's where retirement, needing a hobby and the world of eBay merged. I was always interested in test equipment so I started buying, repairing, calibrating and selling Tektronix analog oscilloscopes. At the same time I was doing some design work on vacuum tube power amplifiers and saw a resurgence of tube type equipment beyond the guitar tube users. I still had the Hickok 539B from my years with

the Burroughs computers and had installed a plate current mod to measure current without breaking the circuit. Demand and prices for tube testers were increasing, so I made a decision to get involved with the Hickok 539B/ C models. The 539C's are simply 539B's with added tube sockets and positions to the selector switches to accommodate the added pins of the sockets. The later 539C's could be field converted to 220 VAC or ordered with that option from the factory. I like these testers because they have three meters, are easy to calibrate and are very reliable.

The first need I had for testing and repairing the 539's was an easy and safe access to the tube tester circuits. This was done with a simple plastic box and pin jacks, then resistor loads were added with a rotary switch to select them along with a diode that could be switched in for checking the rectifier circuits. So with this test box it was possible to check voltages, waveforms along with introducing the required loads. Now a part of the calibration process required a constant current source of 0-50VAC and this required using a variac in conjunction with an isolation transformer. This variable isolated voltage could be fed back into the plate circuit through a 10K series resistor to pin jacks 3 & 8 of the test box. I also fabricated a variable constant current source to safely check the main meter.

This combination served me well until one summer in 2009 I woke up in the middle of the night thinking that, since the 539 had separate power and filament transformers why not use the filament transformer in conjunction with the power adjust as my variable, isolated constant current source. My only concern was that the plate voltage might be off enough to create an error. Up at 3:00 am I did a haywire circuit and it worked as I had envisioned. I added a 10K resistor and a DPDT mo-

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COLORADO RADIO COLLECTORS ANTIQUE RADIO CLUB

Founded October 1988

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Message from the President

We had a well-attended meeting in July. Scott Thomas stepped down, and as a result I have assumed the president's position. I am glad to do so. The meeting had lots of good preliminary planning discussions for the auction in October and participation in Dana Cain's Modernism show, as well as some entertaining show-and tells.

But most importantly we had a presentation of Distinguished Service Awards to some very deserving folks who have been helping the club with their efforts for a long time. These guys have helped out in many roles from serving as officers, organizing and working our special events, getting *The Flash* produced and sent to you, maintaining the website, and supporting the meetings with snacks and multimedia work. Merrill presented the awards which consist of a framed certificate and a nice personalized coffee mug. I'd like to also recognize them again right here: Rich Kuberski, Dave Boyle, Bill Grimm, Mike McCutcheon, Jim McCutcheon, Richard Beckman, Tom Pouliot, Steve Touzalin, and Larry Weide. (The last 4 in the list were not present). Many thanks for what you have done for the club!

And on the topic of volunteering, Rich announced that he will be "un-volunteering" at the end of this year from being our newsletter editor after doing it for 7 years. No one at the meeting stepped up. I know there are many out there for whom this would be a very doable and rewarding experience. As Rich said: "It must be an easy job or I would not have done it".

Merril talked about the low number of paid members, and that we need to get above that number to meet our expenses. Several members paid later during the break, but we need to talk about this next meeting.



We had some excellent "show and tells" which included Yuriy's amazingly sophisticated Fairbanks-Morse chassis from the mid 1930s. Bill Harris showed his reproduction of a Nebraska Novice Transceiver that he built; his story about the meaning of this radio in his life as a boy was very enjoyable. Don Andrus showed his reproduction of a "Special Event Set" telegraph key from the 1920's and told a fascinating history about its use in the early days of baseball game broadcasts.

We talked about the auction which will be Sunday, October 4th. We will discuss final preparations at the September meeting. We will need someone to bring tables.

Dana Cain was at the meeting and talked about her Modernism show which is now combined with a "fall" Vintage Voltage Expo on September 12th. The club has decided to participate and promote itself at 2 tables that Dana will provide for free. We had a show of hands from around 5 people that will help man the tables. Contact me if you want to participate. Dana pointed out that if we are manning the tables during the day, we will get into the expo/show for free. If you just show up to attend the show, you will have to buy a ticket. We will be displaying radios and showing video of prior Vintage Voltages, among other things yet to be determined. Since I am writing this in early August (since Rich needs to publish the Flash before he leaves town) the details have not been worked out. So you will be reading this the week before the Modernism show on the 12th. Note that the regular club meeting is the next day, Sunday the 13th. I plan to use the e-group email to send out the meeting agenda ahead of time. See you then!

Tom Zaczek

CRC CONTACTS

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NOTE: at = @ in email addresses

Upcoming Events

9/6	Labor Day
10//4	Auction/Picnic

Meeting Locations

(Unless noted otherwise)

Littleton	Castle Rock
March	January
July	May
November	September

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 \$20. New memberships will be prorated to the following June.

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mentary push button to the test box and label it Gm Test. No longer was a variac and isolation transformer necessary to check this part of the calibration. The following picture shows the results of the evolution for the test and calibrate box and its companion main meter test box.



In 2011 I teamed up with TubesLab an eBay Store to repackage, fabricate and market these test and calibration units. Jeff at TubesLab combined the Main Meter Tester and the Test and Calibrate unit into one box. The test and calibration manual I had written and updated over the years was used by Jeff by at TubesLab to calibrate his 539B. This led to editing the errors and omissions, which along with his expertise in graphics design resulted in an attractive and useful manual. In addition to the standard calibration procedures an alternate method without the use of an oscilloscope is included along with supplementary information, pictures and schematics that can be useful is servicing these testers.



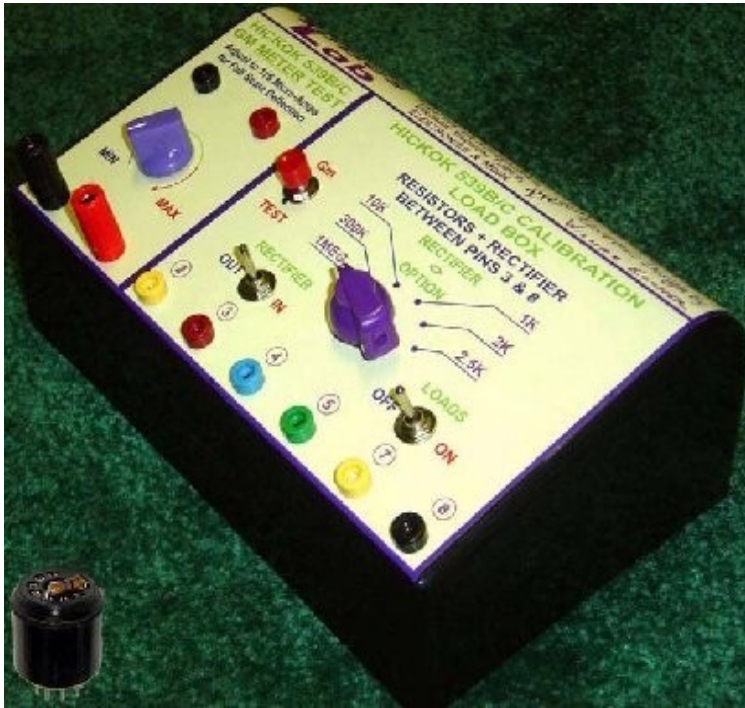
Now I not only had a great hobby, but one with a positive cash flow. Its not a high volume seller due to production and demand limitations, but it has been a rewarding experience. By now I was servicing these testers for customers as well as buying and selling on ebay.

Along the way I designed and fabricated the following modifications. A precision bridge assembly to replace the bridge spool resistors. A solid state conversion for the 5Y3GT and 83 type tubes. A passive line voltage meter calibrator that corrects meter error of ± 5 VACr. A plate current mod to measure the current without breaking the circuit. An internal 12 volt line bucking transformer to minimize the voltage drop across the power adjust rheostat. I also did some custom digital conversions of the bias and ac meters using more expensive meters that were available.

In fall of 2012 I was repairing a Hickok RD1575 a relative to the 539B for a customer and discovered it had a defective main meter. I shipped the meter to Roger Kennedy who has access to new meter movements from Simpson that are fitted into the old case. Come Jan. of 2013 Roger still had the meter. His brother had been terminally ill and he was having health problems himself. Not sure if I would ever see the meter again I was forced to think of solutions.

Once again in the middle of the night I had an inspiration for a circuit to replace the analog main meter with a digital display. Yes to answer your question my wife thinks I'm nuts for these night time excursions to my work bench. I found it was workable and that all the functions of the old meter could be met. I teamed up with my son Mike and a friend of his who has a small CNC machine capable of machining the aluminum panels. They then prepared the panels for anodizing followed by laser etching the text. They also fabricated the PC boards necessary for the electronics. We sold the first small run of these meters in 2013 with encouraging results. Having had requests for a complete set of digital meters at a reasonable price we held up production until we could find a reasonable solution. This took much longer than expected, but we now have a 3-Meter Digital Conversion Kit that will be marketed by TubesLab on eBay starting in October 2014. It will be priced at \$399.99 with free shipping and 1 year warranty and they have a choice of red or green led's

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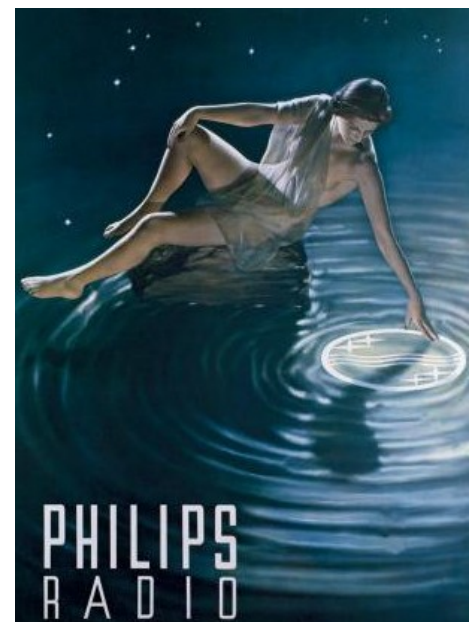
NOTE: TubesLab will also be offering the Hickok 539B/C and the RD1575/WE KS-15750 Digital Main Meters, but not a 3-Meter Conversion Kit for the RD1575/WE KS-15750. The digital bias meter does not measure plate current for the VR tube test, which for the 539B/C models is compensated for with a plate current mod to the existing plate current circuit. The 3-Meter Kit is not available for the RD1575/WE KS-15750 models because they did not have factory installed plate current jacks, which requires a more extensive modification to the units.

Finally for any of the CRC members that request it I will provide schematics, suggestions or technical assistance at no charge on the following Hickok Models 539B or C, RD1575 and the Western Electric KS-15750. I can be reached by email at wpeccher@aol.com or call me at 303-471-2547.



Hmmm, I wondered. J
Just what were they selling?

I was looking for some fillers for this issue and ran across a bunch of old radio advertisements. As I searched through the images, it struck me—just what are they selling?



Photos from the last meeting.



Tom Zaczek replaces Scott Thomas as our new President—Congratulations



Great turnout for this meeting



Dana Cain gives information about upcoming Modernism Show



New member
Andrew Wolberg



New Member
Steven Farley



Wayne Russert gives update on
Tiny Town Project



Tom shows off raffle items



Dave Boyle gives update on
CRC Auction on October 4th



Dave Boyle receives thank you
gift from the club



Rich Kuberski receives thank you
Gift from club



Bill Grimm receives thank you
Gift from club



Mike and Jim McCutchen receive
Thank you gift from club



Yuriy Yedidovich describes his 1937
Fairbanks Morse radio



Don Andrus tells about Western Union
Silent Sender set.



Bill Harris shows off his homebuilt
Novice Transceiver Western Radio BN-1



The Open Trunk

Member submitted advertisements



REPAIR SERVICE:

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

Call David Boyle
303-681-3258

11/09

For Sale: by Dave Boyle

Most of the following instruments have been completely refurbished, repaired as needed, and calibrated. Most have manuals and test leads.

Prices are negotiable...please make offer.

1) Eico 5 inch oscilloscope. Model 425. Perfect for old radio repair work. Completely electronically rebuilt with **new CRT!** \$68.00

2) Eico "Professional" VTVM, 6 inch meter \$40.00

3) Ballantine Labs. Model 321 VTVM. True RMS and p-p measurements. 19 inch rack mounting \$25.00

4) Eico Capacitor and Resistance tester. Model 950B, tests all values and other capacitance functions.

Uses a tuning eye as an indicator \$65.00

Radio Chassis For Sale:

1) RCA Radiola Model, 80,82, 86 complete dual chassis and mounted speaker. VG condition, with tubes

including 2ea VG 45 tubes. Make offer.

2) Philco Model 91. Complete *working* chassis with 12" good speaker. Working tuning meter too!

Make offer.

3) Philco Model 37-610 complete chassis with tubes, good condition complete with bezel and glass.

Make offer.

Call David Boyle,
303-681-3258

09/15

Wanted: 1920's Wooden Horn Speakers and a Crosley Musicone Speaker.

Also 1920's battery sets, especially Neutrodyne sets, Pre 1930 AC Radios and a Crosley Widget Console Radio

Michael O'Leary 602-354-7011
moleary9@cox.net

WANTED: To buy: 1948 Motorola 5A9B portable radio, Maroon color. Good condition only.

Dewey Reinhard 719-596-5516
deweyfly30@gmail.com

WANTED: Broadcast or recording mics, especially from 20's to 1950's.

Crosley Pup Info

NBC chimes, all eras.

Tom Keeton 303-797-8073

I have collected radios of all types for 30 years and now it is time to let them go to new homes.

Please call me for an appointment to see if any of them would fit in your collection.

I have tube radios including Tombstone, Cathedral, and Novelty etc.

I also have a large collection of transistor radios both shirt pocket and Novelty type.

Please call 303-238-1384
Thanks in advance,
Ron Smith

RADIOS4US@aol.com

For Sale: Rare 1927 Victor 9-54 Radio / Phonograph in a magnificent Walnut Cabinet. Original, unrestored condition. For details and pictures please see this website:

www.pier52.net/victor954/

Mark Whalin

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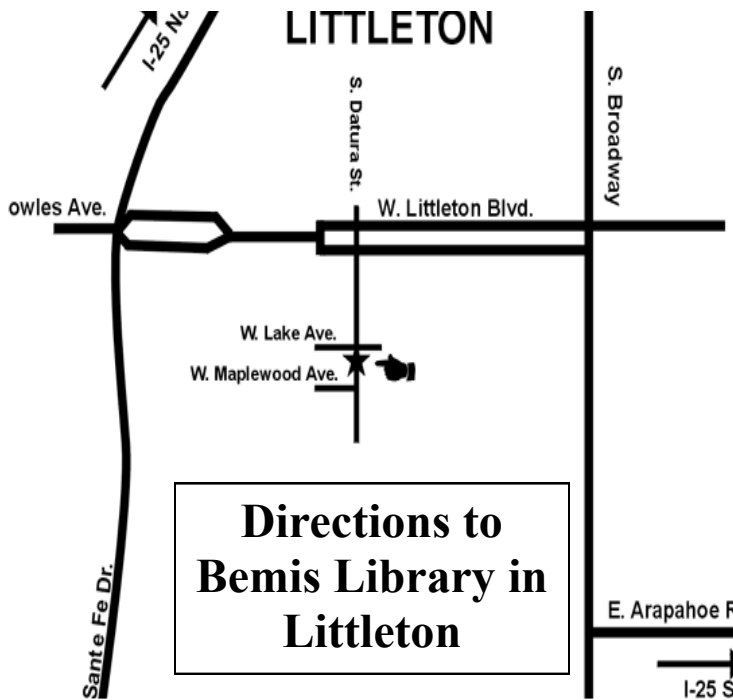
Castle Rock, Co.

SUBMISSION OF ARTICLES & 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.

The September 13th 1:00 meeting will be at the Miller Library in Castle Rock



Directions to Miller Library in Castle Rock

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.

Topic for this meeting

Prepare for Auction/Picnic—Find a Volunteer to continue with the Newsletter



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

FIRST CLASS MAIL