



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

Volume 26, Issue 1

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

Jan/Feb 2015

My 1938 Midwest Model 16-38 Radio Restoration by CRC Member Dave Laude

I've had this radio since 1995 and decided the time had arrived to restore it. My main reason for this article is to show you some unique features that I've not seen before. The model number gives the number of tubes followed by the year of manufacture. This 16 tuber features 6 bands, touch button motorized tuning, automatic frequency control (AFC. Locks onto station frequency), Color Ray tuning, and 12" woofer with 6" tweeter for originally around \$85. The dial is very interesting and will be examined in detail.

The Midwest Radio Corporation, founded by E.G. Hoffman, had its beginnings around 1920. Headquartered in Cincinnati Ohio, they produced the entire radio in their factory/laboratory including the cabinets and the winding of their own transformers and coils.

The company sold their products by mail order from their factory thus eliminating the middleman and saving the consumer money. Midwest radios were inexpensive compared to many other makes.

For example, an 8 tube 1937 Zenith console may have a suggested price of \$89.95. The catalog price of an 18 tube Midwest console started at just \$89.50 complete. While a wide variety of exotic wood veneers were used to produce outstanding looks, the cabinet construction was otherwise thrifty. By offering credit terms, trade in allowances, free home trials, gifts, user-agents and other incentives, the company appears to have been quite suc-

cessful claiming over 120,000 customers by 1936. After World War II sales started to decline as it did for many mail order business and by 1957 or there about, the company ceased to exist.



From their early battery and electric sets to the introduction of television the Midwest Radio Company kept abreast of the latest radio developments. Cabinet styling was often dramatic and innovative and some design features held US patents such as the 1936 'V-Front' which incorporated sound diverting louvers placed behind the speaker grille. A customer could purchase a chassis and matching speaker only, no cabinet. The chassis came with an integral faceplate which allowed for easy installation into the customers existing cabinet. This helps explain why it is not uncommon to find a Midwest chassis mounted in a cabinet of a different make. For more info and plenty of photos tune your web browser to: <http://www.midwestradiomuseum.com/>

I started my restoration by testing all the tubes, thinking at least 1 of 16 might be needing replacement, but all were good. Then I proceeded with the usual replacing of electrolytic and tubular capacitors that enabled the radio to begin working, but with weak audio. Testing the audio section showed it to be weak through to the speakers, but strong at the push-pull au-

(Continued on page 3)

COLORADO RADIO COLLECTORS ANTIQUE RADIO CLUB

Founded October 1988
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Message from the President

Greetings. I look forward to another year with our club.

I never fail to learn new things about antique radios at each meeting. I'm pretty much of a novice when it comes to repairing old radios so I appreciate the club's willingness to share knowledge. Please continue to bring in your radios for show-and-tell since it's always the highlight of the meetings for me.

While I have collected old radios since the 70's, I have not been able to do much with them or even always keep them due to my many moves while in



the military. Old radios and the associated repair equipment can be heavy and bulky to move around the country so I usually had to start over at each new station. Now since I plan on staying put in Colorado Springs, I plan on putting more effort into really understanding antique radios without the fear of having to get rid of them before my next move.

I would like to thank David Boyle for handling the presidency for past few years.

Scott Thomas

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NOTE: at = @ in email addresses

Upcoming Events

1/3	1929 CBS incorporated
1/9	1943 Nicola Tesla dies
1/24	1984 Apple introduces the Mac
1/27	1941 FDR starts third term
1/31	1958 U.S. launches Explorer I
2/6	1929 RCA Victor formed.

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

**Meeting this month is in Castle Rock,
chance to view a demo of Dave Boyle's Tesla
coil after the meeting.**

(Continued from page 1)

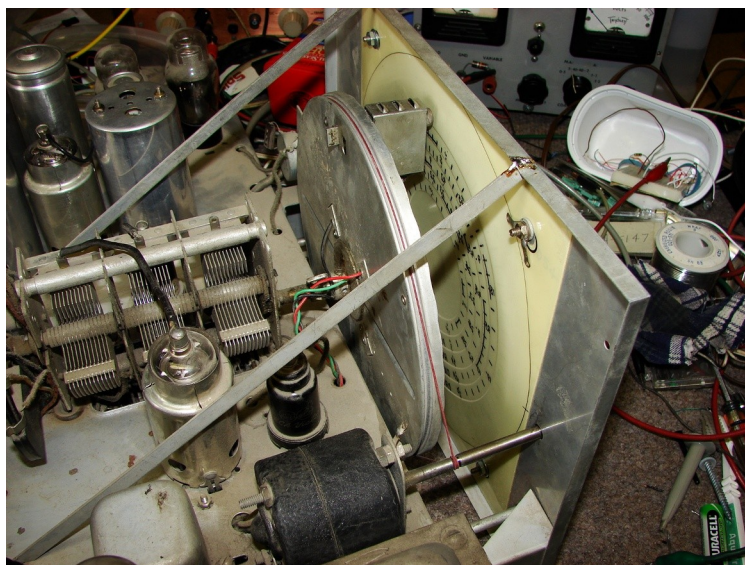
dio output stage to the transformer. I began to worry that that large speaker was defective so I got down on my hands and knees for a closer look when I saw a potential problem. Someone had added a wire for a separate speaker by soldering a coax cable across the speaker. This cable was only a few inches long and the “open” end was a fray of intermingling strands. My wire cutters opened the short it presented and then plenty of volume ensued. It was a wonder I could hear anything with that short.

Another problem was that the AFC didn't function. It had its own IF transformer with a shorted cap and fried resistor for B+ filtering deep inside. I also opened the other 3 IF transformers to replace any similar filter caps.



In the full top of chassis photo you can see the IF section on the left, RF section with tuner in center and power supply with audio on the right. The tuning drive motor is the black object in the upper right, left of the transformer. On back of the tuner is the station programming device. A few tubes are too short to be seen.

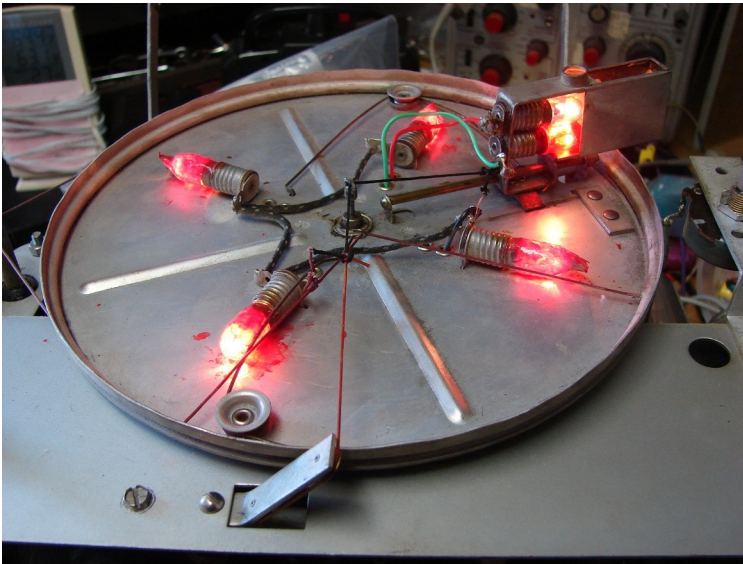
In the side view of chassis photo you can better see the tuning motor as well as the dial. The motor shaft passes through the front panel to a knob for “old school” manual tuning. From the front, only the standard broadcast band numbers can be seen (see white dial photo). The other bands are labeled on



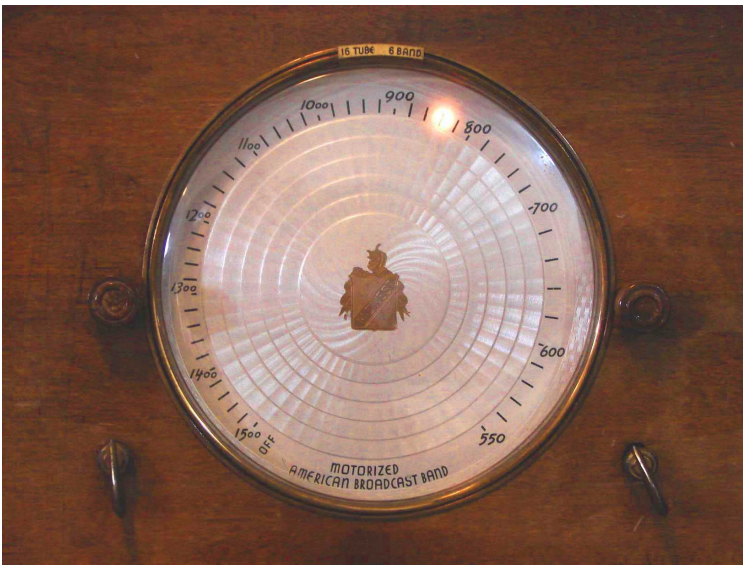
the inside and are not invisible from the front unless illuminated an eerie red from the back when any short-wave band is selected (see red dial photo taken in dark room).

The disk with the red lamps is centered on the tuning capacitor shaft and thus rotates when tuning (see photo). The four equally spaced red lamps softly back-illuminate the dial for the short-wave bands only. On the top right is a dual tuning lamp enclosure where I have the cover pulled to the side for observation. The small red opening at the top of the enclosure projects light onto the back of the dial to highlight the receiving frequency. The light emitted is called the Color Ray! There is no other frequency indicator. Why two lamps? The front one is clear and the other one is red. When tuning, a one tube circuit monitors the automatic gain control (AGC) signal and when more negative in voltage, indicating a stronger received signal, reduces the white lamp intensity making the Color Ray somewhat redder. When the signal is more positive in voltage this indicates weak or no signal and the one tube circuit increases the white lamp intensity. The Color Ray doubles as the dial lamp and tuning indicator. Very cool! The Color Ray is clearly visible on the dial photos. The color change is subtle, but noticeable as the radio is being tuned. When switching bands the lamp enclosure will move up or down sliding on a rod. There is a tension spring to hold it up. Tugging against the spring is the cord seen in the photo emerging from the chassis opening. It pulls to positions determined by the band select switch to which it is connected. You may see the cord that goes up to the center of the disk where it passes through a hole on the tuner shaft so as the disk rotates during tuning the cord length remains constant and the lamp enclosure remains on band.

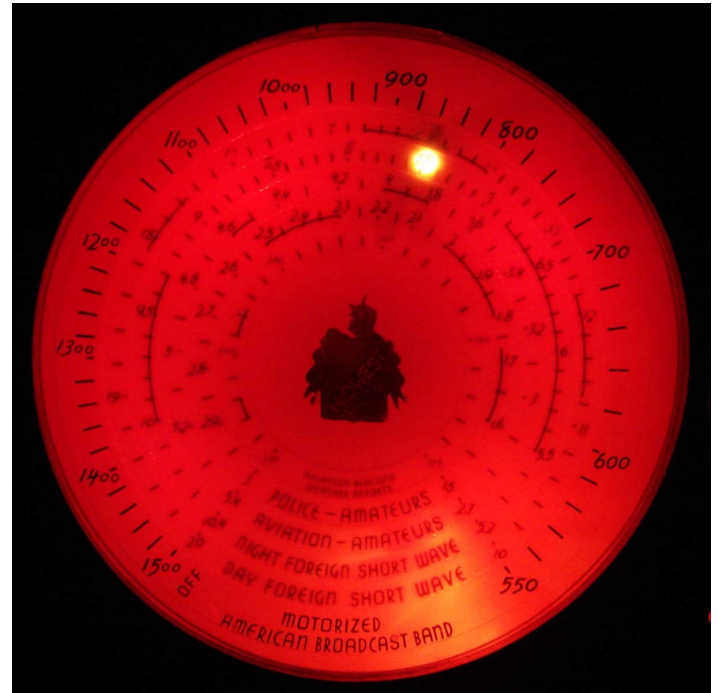
For you electronic geeks the unexpected way that the circuit works is as follows: The Color Ray transformer, perhaps 110V to 6.3 V, has its primary (110V side) connected to ground and to the plate of a tube. The secondary connects to the white lamp and to 6 VAC. The other lamp lead is grounded. The red lamp is always full on. The tube has its cathode to ground and control grid connected to the AGC line



so as the AGC signal goes more positive (weak received signal) the tube turns on more thus increasing the white light and diminishing the red of the Color Ray. When the tube turns on more it loads the transformer primary thus increasing current in the secondary to the white lamp. Since the current is AC the tube can only turn on during the positive half cycle.

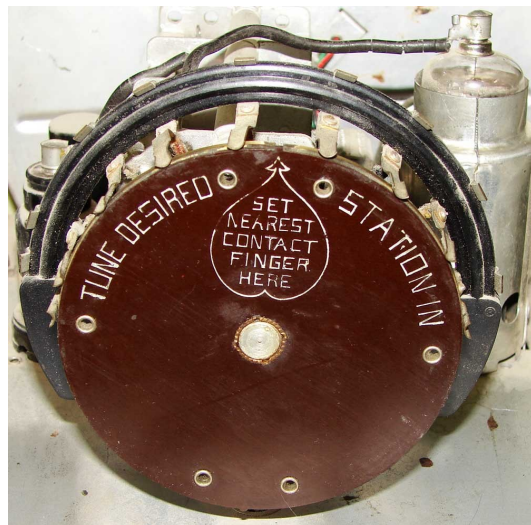


The motorized tuning is activated by 9 white push buttons located on the top of the cabinet (visible in full radio photo). A red push button turns the radio off. The desired station button is held down and the motor drives the tuner until the station is reached. The mechanism for programming the stations has contacts that can be slid around a fixed black insulating ring to set the station (see photo). Each contact connects to a different push button. The brown disk rotates with the tuner's shaft and has two copper semi-circle rings along its edge that the



contacts rest on with an air gap between them. The gap is located where the arrow points where there is also a small non-conductive bump. If the contact whose depressed switch is contacting one ring the motor runs one direction and opposite for the other ring. When the bump is reached the contact lifts off the copper and the motor halts.

You might be able to see the word "OFF" on the dial photos near the edge at about 7:00 o'clock. By pushing the red push button on top of the cabinet the motor rotates the Color Ray tuning fully counter-clockwise until the power switch is encountered and disengaged. To turn on, pressing any white button will do. Watching the Color Ray trace across the dial is captivating and reminds me of the moon tracking across the sky. This is by far the most interesting and



cleverly designed radio I own and I didn't know it for 19 years! Maybe you have an interesting radio waiting to be restored and discussed in "The Flash".

Have I Got A Job for YOU!

by CRC Member Larry Weide

Hello and the best of the new year to you all,

As some of you know I've programmed and operated our auction control system since 1992. That's right, for the last 22 years. Over these years the system has grown from a simple spreadsheet recording and processing method on a painfully slow early computer and printer to the current system of wireless connected laptops and printers that can register, conduct the auction and print statements as fast as one's fingers can fly.



The only problem with the system is me. That is, after all these years I'm getting old and tired - both literally and figuratively. In other words I've decided that 2015 will be the last year that I will be involved in running the CRC auction system.

And actually the 2015 date comes with a caveat; I will only be involved in 2015 IF there is someone else who will work along side me, to learn and/or change the system and then carry on thereafter.

There are a lot of "moving parts" to the current system, and by system I mean not only the control program itself but also the associated auction items like the computers and printers, the signs, the PA system, pre registration work and the like. It may be that whoever takes over from me might very well find that a different system would work better for him.

So, as an overview of how a transition might happen, I'd like to suggest some possible ways of how a "new person" could come on board;

□ Continue with the system as is. This would require that the program material be transferred to the "new persons" computing equipment, as well as learning how the system works. As long as I'm in the club I would still volunteer the use of my PA equipment - if needed.

□ The "new person" replaces my system with one of their own. It's just an idea, but perhaps it could once again be done more simply with a spreadsheet, now that computer equipment is so much faster.

□ The club looks into the possibility of purchasing a professionally written auction program, which of course the "new person" would learn and use.

I'd very much like to talk to anyone who might be interested in taking over this operation, even if it's just talking about how the current system works and perhaps going over any ideas or suggestions about how to best do the transition. Although whoever comes on board will have two years to come up to speed, it's going to behoove us all to get the discussion going as soon as possible.

Frankly, I've enjoyed the many years of being a part of our auction in this way but nothing lasts forever and I really feel that the time for change has come.

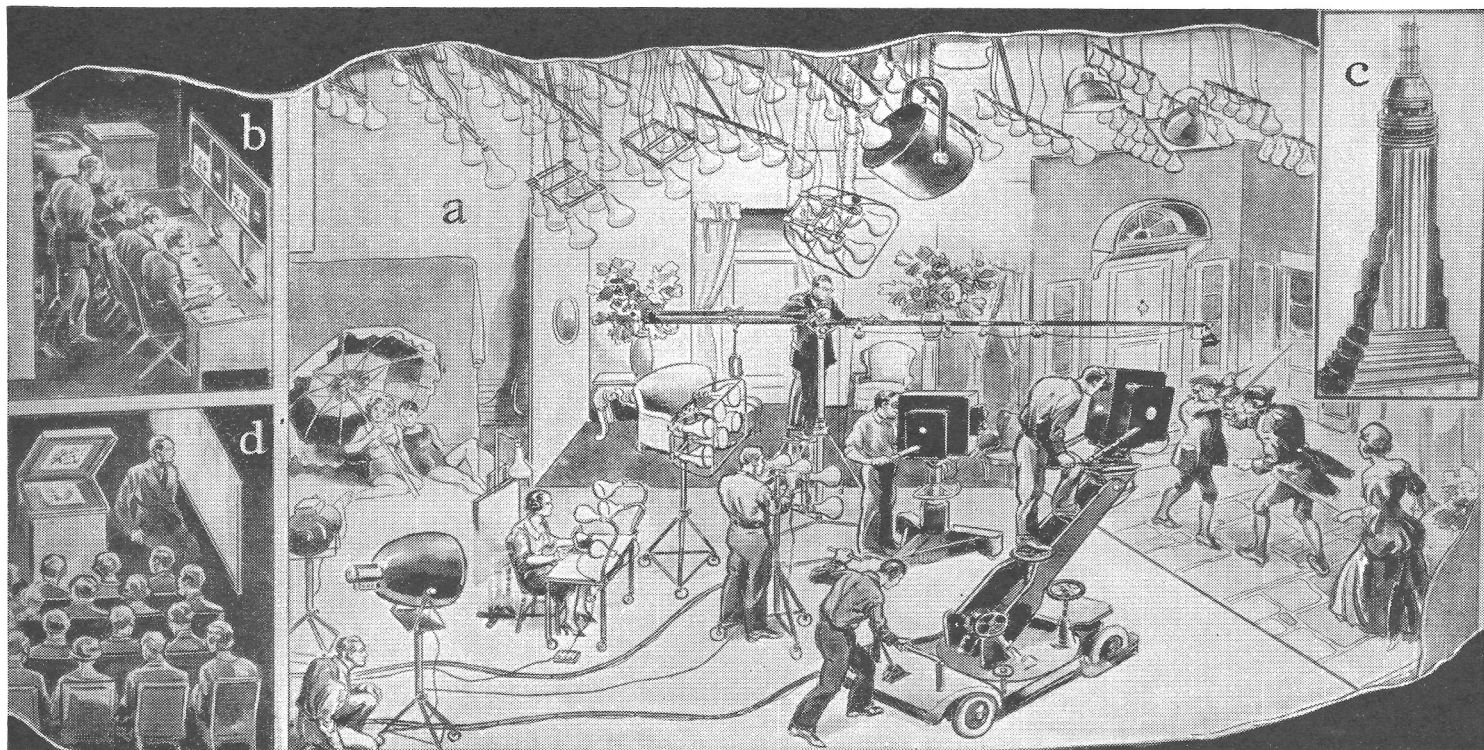
With regards,

Larry Weide

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lweide@msn.com

TELEVISION

TELEVISION OCCUPATIONS OF THE FUTURE



The above shows the operating technique which will be used in putting on the Television Show this spring.

A STUDY of occupational possibilities in the field of television before that interesting art has made its commercial debut is possibly premature and certainly hazardous. It savors slightly of planning the Panama Canal shortly before the discovery of America. At best, any vocational analysis of the television of the future must be read with several provisos in mind. In the first place, a *normal* engineering development of television is assumed. That is, it is taken for granted that technical knowledge of television will increase apace, enabling the practical solution of the remaining engineering problems of television within a reasonable time.

In the second place, a *normal* economic development of television must be regarded as probable in any analysis of its occupational possibilities. Television transmitting and receiving equipment is elaborate and relatively costly. Television program construction will be more complex and expensive than radio program construction of today. The television art is a comparatively luxurious one. Manifestly, such an art can hardly be introduced rapidly on a large scale in times of marked economic depression nor can it be expected to win public favor under such circumstances. The television programs will be paid for, under our present system of broadcasting operation, by advertising sponsors in the main. The sponsors will in this way purchase a portion of the purchasing power and general good will of the

looking and listening public. But the size of the audience, its purchasing power, and its mood will all influence the extent to which the advertiser can justifiably support television broadcasting. Accordingly, there is an action and reaction between economic conditions and television success. If times are bad, the programs must be restricted which, in turn, affects the public response that justifies the broadcasting of the programs. Only in reasonably good times can this circle of effects be broken advantageously. Accordingly, those contemplating television as a career will watch closely for times of general economic recovery since it is in such times that arts like television can be expected to flourish and to afford opportunities for a multitude of new workers.

Opportunities in Manufacturing

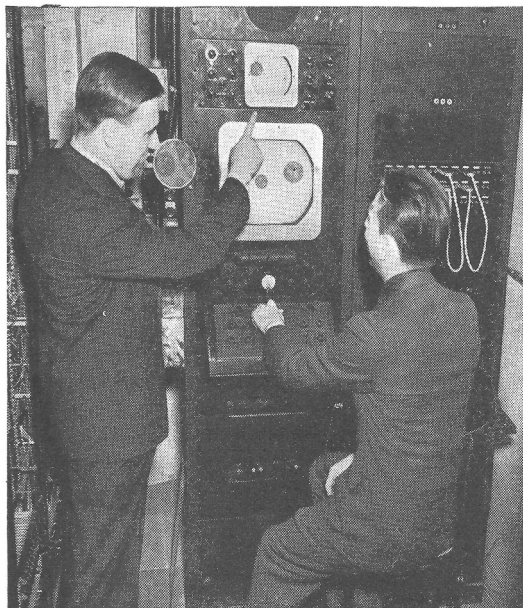
Let us start at the factory where the necessary equipment for television transmission and reception originates. Here are needed *apparatus engineers* who are capable of doing research, development, and design work in that complicated field. These men must be technically trained and well-qualified along conventional radio lines in order to meet the more difficult problems of television. These radio engineers are, in fact, electrical engineers with specialized training in the particular field of communications. In the factory there are also needed *tube engineers* who will handle the similar problems of vacuum-tube and cathode-ray-tube production which are an integral part of the tele-

vision transmitters and receivers. Some of these men may be university-trained physicists who are prepared to enter the equally complex but more commercial fields of tube research and design. The usual factory personnel will be required for television equipment construction, including *test men*, *super-visors*, *production* and *manufacturing engineers*, and the like.

Transmitting Station Jobs

Once the television transmitter has been built and shipped, it must be installed in the television transmitting station and thereafter maintained. At this point, an entirely new series of openings will exist. Television *station engineers* will include *field-survey engineers* who will determine the best location for the station and its antenna system and who will study the strength and acceptability of the signals throughout the service range of the station. These men will also furnish the data which will satisfy the governmental authorities that the station is covering its territory with an adequate service in the physical sense. The equipment must be maintained in good condition at all times, and emergencies must be met, and this is the job of the *maintenance staff* of the station.

The television-station studios will require a staff of their own of considerable size and of wide diversity of tasks. Considering the technical men only for the moment, there will be *lighting experts* who will arrange and control the powerful illumination which



F. J. Bingley (left) & B. E. Schnitzer, Philco television engineers, monitor a live program from Philadelphia station.

floods the sets (scenery) in the studio and the actors. These men must be skilled electricians capable of handling, shifting, and controlling illumination in any desired fashion. There will be the *microphone* or *sound men* in the studio who will place and control the microphone supports or booms which hold the microphone close enough to the actors to pick up speech or music, while still keeping the microphone outside of the field of view of the camera. Here men with steady hands, quick responses, and a cool way of working effectively will be required (particularly in the stress of high-speed operations during the studio performance). In the control rooms of the studio, there will be *sound-control men* and *picture-control men* who will handle respectively the quality of the sound and the picture which is being transmitted.

Sometimes, the television transmissions will be from sound-motion-picture film which has been previously made. For example, a film newsreel may be transmitted. This requires that there shall be *projectionists* who will handle and project the film on the television pick-up whereby it is sent to the audience. Here too there will be necessary *film-sound control men* and *film-picture control men* who will carefully monitor the transmissions.

Camera Men

The *television-camera men* will constitute a new profession as well. These men handle the television pick-up or "camera" which is trained on the action and carefully and continuously focussed. The reactions of these camera men must be instantaneous, they must work with perfect coordination in groups where several angle-shots of the same scene are to be transmitted, and they must be resourceful and artistic in their pictorial sense.

The television-camera men in the studio will be a part of a larger group, for it is clear that the outdoor television pick-ups will require the services of men of similar qualifications and perhaps as great resourcefulness

to meet the multitude of complicated, partly unforeseeable, and sometimes uncontrollable conditions to be encountered in outdoor jobs. The outdoor camera man will necessarily be of somewhat the same type as the present successful newsreel camera man who can meet an emergency promptly and effectively.

Since a fair portion of television programs may be, as stated above, from film, it will be necessary to film program material, recording both picture and sound in the same way as now done by the motion-picture studios and newsreel companies. This will lead to a demand for *film camera men, sound recordists, editors, cutters*, and other men of the types found in the motion-picture studios of today.

The demand in these fields may develop fairly rapidly as the program "hunger" of television broadcasting rapidly increases after its commercial inception.

Television Service Men

Still considering work of primary technical nature in the television field, it is clear that the television receivers of the future must be installed correctly and kept in good operating condition. This requires the existence of a good-sized group of television *service men*. Such men must be familiar with the circuits of television receivers, their operation, the testing of the receivers for faults, the location of the faults and their correction, and the best method of installing and maintaining the receiver in the home. The public response to television will depend in some measure on the skill, honesty, and diplomacy of these service men, particularly during what may be the more or less difficult early days of commercial exploitation of television.

Caution!

One final word may be in order in the form of advice to the person who is thinking of entering the field of television. Don't push and run—walk; and watch where you are going. Speed in rushing into the field will not be nearly so helpful as first knowing where your abilities lie, cultivating those abilities by training in fields similar to television, and then everlastingly sticking to the job of perfecting your talents and their application once you have entered the television field. Remember that television success will come rather as the result of a prolonged marathon of effort than from a brief gold-rush of enthusiasm.

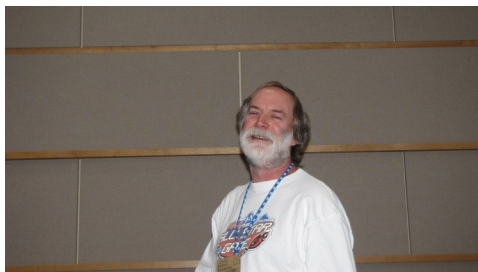
[Reprinted by the courtesy of *Occupations, the Vocational Guidance Magazine* for April, 1938. (Copyright 1938.)]

Name	Description	When	Have	Sent to Rich
David Boyle	Technical Article or Restoration Article	Winter 2014/2015		
Dave Laude	Radio Restoration	Fall 2014	Yes	Yes
Martin Garth	Burned Telegraph Key Restoration	4th Qtr. 2014		
Barney Wooters	The Cathode Ray Oscilloscope Tech. Article	End of 2014		
Rich Kuberski	Restore Crystal Phono. Cartridge	2014/2015		
Ron McCulley	Restoration AK-666 Radio "Automatic"	2014		
Bill Eccher	Hickok 539 B/C Tube Tester Calib. & Dig. Conv.	Early 2015	Yes	
Tom Zaczek	Restoring a Grundig Portable	2014		
Yury Yedidovich	Silvertone "Bug"	2014	Yes	
Don Andrus	Origins of The Morse Code... Article	9/2014	Yes	Yes
Chris Cartwright	AK-40 Power Supply, "Depotting" and Repair	2014		
Bill Harris	Universal Battery Co. 32 Volt Farm Set	2014-2015		
Marty Phillips	"Why I Like Zenith Radios" True Confessions!	2014-2015		
Wayne Russert	Article on "4 Course Radio Repair"	Early 2015		
The below were not on the list published in the Flash.....				
Gregory Malanowski	DUAL CONVERSION SUPERHETERODYNE RECEIVERS	Jul 2014	Yes	
Steve Touzalin	Reprint of March, 1917 issue of "The Electrical Experimenter" on Bakelite	2014	Yes	

Photos from the last meeting.



Merril Campbell fills in for Dave Boyle and opens the meeting



Robert Baumann comments about lack of participation for people to be president



Tom Zaczek takes the bait and agrees to be the new club V. P. Congratulations



Scott Thomas also steps up and agrees to be the new club President, Congratulations



Good group for today's meeting



Lots of stuff for raffle table



Barney Wooters gives information on Sentinel Radio



Yuri Yedidovich makes an antenna for a Silvertone radio out of tin foil



Wayne Russert gives some history on Woolroc



Tom Zaczek with his refurbished Montgomery Wards 04BR514 radio



Cliff Shelby with restored Minerva Corp. of America Radio



Ken Evans talks about Lehman Brooks estate

Hey guys, some of you have web sites with very cool stuff. Send Rich Kuberski the link to your site with a brief description and he will publish the information in the newsletter so club members can admire your hard work.

His email address is listed on page 2



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 so please make an offer.

1) Philco Grandfather Clock Radio ..chassis and clock only.. Completely repaired/refurbished chassis with VG .original speaker. Works great, Clock has a new motor. Ready for installation. At give away price since customer did not ever pay for the repairs. **Make offer (cheap!)**.

2) HP 608 F VHF Signal Generator, with scope cart, also spare special tubes, and manual. **Free to a good home!**

3) Eico 5inch oscilloscope, Model 425 Completely gone-thru, new hi-voltage caps, all out of spec parts replaced, **NEW CRT!**, etc. \$68.00

4) Eico "Professional" VTVM.6 inch wide meter. \$45.00

5) RCA Institute RF Signal Generator All standard frequency ranges and 400 Hz audio frequency too. \$30.00

6) Heathkit TV Alignment Generator, Model IG-52. \$25.00

7) Lamda regulated power supply. 0-14Volts. Solis state, 5 VDC @ 2 amp, as an example. 2 available. \$7.00 ea.

8) Ballantine Labs. Model 321 VTVM.true RMS and p-p measurements. Rack mounting with manual. **Make offer!**

9) Philco Model 91 *complete working* radio chassis with two good speakers and a working tuning shadow meter! Original VG 12 inch speaker. **(cheap!) Call with offer.**

Call David Boyle,
303-681-3258

01/15

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

Wanted: Two tuning condenser knobs for a Crosley model-X, will buy or trade for them. Charles Combs, 508 E. Daniel St., Albany, MO 64402.

charley@albanymo.net

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

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Only \$5.00 + Tax per Garment

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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.

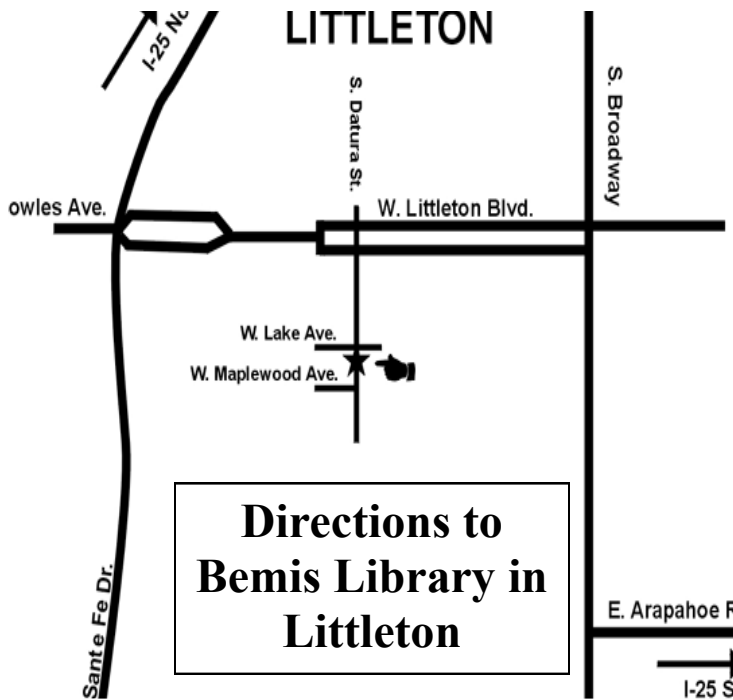
Judy Houser
(303) 771-3577
Highlands Ranch, Colorado

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 January 11h 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.

REMINDER

Dave Boyle will have a demonstration of his Tesla Coil at his home after the meeting. 1058 Colt Cir. Castle Rock, about 15 minutes away.



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

FIRST CLASS MAIL