

The C. R. C.

FLASH!!

Official Journal Published For Colorado Radio Collectors
Dedicated to the Preservation and Documentation of Wireless, Radio, TV, and Associated Equipment

Volume 4

MAY • JUNE 1993

Issue 3

ANNUAL SHOW HUGE SUCCESS !!

April has for five years been one of the most fun months for CRC members, because....

"It's show time!"

Scores of old radios magically appear with those who love to collect them. Converging on the National Western Complex to strut their stuff, swap equipment and new war stories, and to glean green, red, and blue ribbons, CRCers swarm religiously around old folding tables supporting their prizes. They lay-in-wait for would-be admirers to show even a glimmer of curiosity about their radio's origin, hoping they'll ask a semi-serious, quasi-technical question about its' nebulous innerds!

This year's festivities were typical with a nice showing of a wide variety of radios and accessories sans a year's pound or so of dust. More space for dealers was required to the delight of all

members who reaped the ol' radio harvest within the first few hours Saturday morning. Seemingly, little else was sold until late Sunday afternoon, just before the show closed. Then, trading was brisk and radios disappeared faster than it could decide if the lowered prices really were bargains.

For the first time Fistell's

Electronics asked to be represented with a couple of large tables adorned with old tubes, parts, doo-dads, thingies, and even a bowl of fruity Life Savers for the taking. These candies were appropriate with labels looking as if they had come from the era of the first transistor radio!

The most uncomfortable moment of the weekend is the awarding of the "BEST". It might not appear like

it, but tension is high within the CRC community. When final points are tallied and equipment is brightly decorated in Christmas red, green, and blue, CRCers take pride in being radio collectors!

MAY 16TH
MEETING
Southwest Bank
Building
(1380 South Federal)
1:00 PM
Community Room
(Downstairs)
"Open trunk" Swap Session
after the meeting

Official Journal of the
**Colorado Radio
Collectors**

Founded October 1988

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

WANT ADS

and

ARTICLES

should be directed to:

C. R. C. Editor

1249 Solstice Lane
Fort Collins, CO 80525

DEADLINE NOTES

It's the intention of this Editor to broadcast our journal bi-monthly just prior to the CRC meetings. Articles about and pictures of your treasures are welcomed as *Wants-Sale* ads and any letters or comments about our great hobby. All materials used are the copyrighted (©) property of the *Colorado Radio Collectors*. All pictures returned.

Your Editor will put together articles about your best finds, restoration and electrical repair techniques, or your recollections, and stories about radio. Just provide a handful of information in any form...and we'll put it together!!

Our club can only succeed when we share our experiences, talents, needs, and adventures; you're being asked to contribute in whatever way you can. **SHARE** with us today!! Thank you.

Deadlines: (Editor to receive)

December 15 • February 15 • April 15
June 15 • August 15 • October 15

**Dues Presentable
Upon Membership**

Anniversary

\$10⁰⁰ Annually

Larry Weide

5270 East Nassau Circle
Englewood, Colorado 80110

(Please do NOT make checks to CRC,
rather to "Larry Weide, CRC Treasurer")

MEETING LOCATION

Unless otherwise noted in this Journal, beginning in January, meetings are held on the second Sunday of every other month (exception: third Sunday in May) at 1:00 PM at the *SouthWest Bank Building*, Community Room - 1380 South Federal, Denver. A swap meet follows the meeting in the bank parking area.

C. R. C. OFFICERS

(All area codes below are 303)

President:

Dick Hagrman 794 • 6674 Denver

Vice President:

Riggs Smith 973 • 8792 Littleton

Treasurer:

Larry Weide 758 • 8382 Englewood

Journal Editor / Secretary:

Rick Ammon 224 • 5446 Ft. Collins

This publication was completed on a Commodore Amiga A2000 computer and a Hewlett Packard DeskJet 500 inkjet printer. The software program used is PageStream V2.2 by Soft Logik of St. Louis, Mo. Graciously printed by PRESSWORKS of Denver, Colorado.

Copyright © 1993 ♦ Colorado Radio Collectors ♦ All Rights Reserved

MIDGET RECEIVERS REVISITED

By Vicki Ehrlich-Ammon

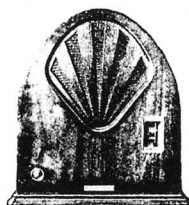
Midget this...midget that. In 1931, was the world shrinking?!! No. Miniatures weren't taking over the world but they were filling a very real place in our society. As today, midgets cost less, take less room, provide more convenience for us. Midget (miniature) golf courses took less space to play on and maintain. Midget (compact) cars were a cheaper form of family transportation.



*Premier
Elec. Co.*

Midget (mantel) radios weren't just an inexpensive replacement for the full-sized receiver in 1931.

The mantel receivers brought home radio entertainment for those who could not afford higher priced, full-sized models. It proved itself as a convenient portable, an extra set for the guest chamber, or other rooms. It even got to go on outings into the family garden on occasion.

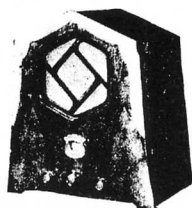


Powel Mfg. Co.

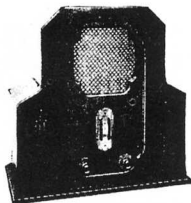


*Keller-Fuller
Mfg. Co., Ltd.*

As 1929 began to close and the effects of the depression were working on society, a full-scale movement was being put in place in Los Angeles. (Continued on page 6)



Jewel Mfg. Co.



*Pilot Radio
& Tube Corp.*



*Jackson Bell
Company*

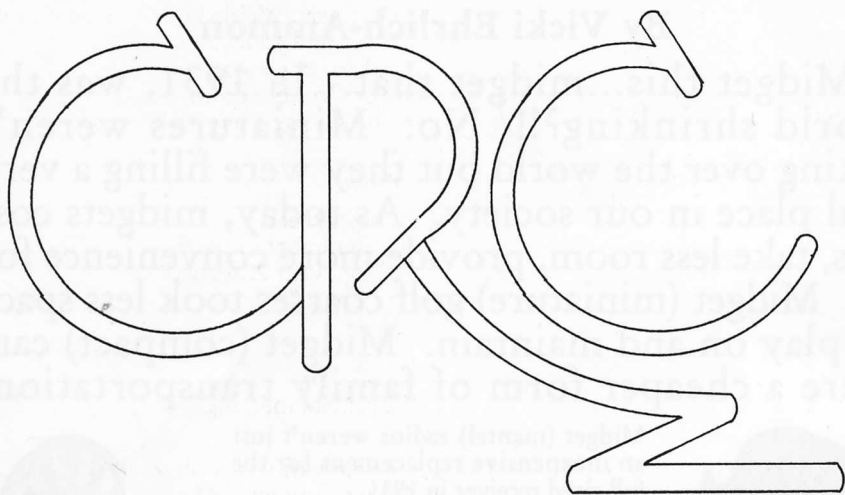


*Keller-Fuller
Mfg. Co., Ltd.*



*Jesse French &
Sons Piano Co.*

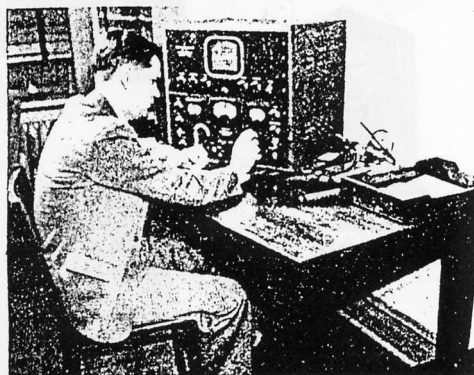
Radio Parts'n'Pieces



The graphic above has been suggested as a logo for our club. Member Steve Coulam spent the time to create this expression of what the CRC means to him and was considering making a neon sign of the same design. We appreciate the effort even though he has since left the Mile High City for the greener grass of California. Steve, be sure you bolt down all your radios out there in that shakey-land! And let us know how the collecting is going!

Taken from *RADIO TOPICS* of June 1923:

"....The movies used to be blamed for almost everything under the sun. Now it's the radio. A New Jersey man killed his wife and daughter recently and his defense was they listened to the radio too much...."



radio ideas

A CATHODE-RAY TUBE has been incorporated into the multitube communicating receiver at the left to give a visual checkup on the characteristics of incoming signals. Placed above the receiver proper, the cathode-ray tube can be switched on any time the operator desires. The image obtained is dependent on the kilocycle width of the intermediate-frequency stages. It enables the operator to adjust the receiver for the best possible reception at all times.

ON THE AIR

Dick Hagrman, C. R. C. President

At the May meeting our group will elect new officers to the positions of President and Vice President (President Elect). Larry Weide and Rick Ammon will continue their outstanding duties as Treasurer and Journal Editor/Secretary. The following nominations have been tendered for the two, soon to be, vacant offices. Barney Wooters has been nominated for President and Jerry Tynan has been nominated for Vice President. Prior to the voting there will be a final call for nominations for these two posts.

The agenda for the May meeting is as follows:

1. Critique of the April Show and Swap Meet
2. General information on the July picnic/swim party
3. Planning for the September meeting. Our 2nd auction
4. Implementation of the "Advisory Board"
5. Mid-session break
6. Raffle (donations requested)
7. Nomination and voting for new officers
8. General discussion and close of business meeting
9. Swap Meet in the parking lot

As I finish my term as President of our organization I wish to thank Riggs, Rick, and Larry for the help, support, and efforts they expended, which in turn made our organization stronger, and my job much easier. Again a major **THANK YOU** to these guys and, to all of you who aided and supported us in the activities of our term. In closing, I urge each of you to continue to support the C.R.C. Officers and it's activities.

I have enjoyed it. I had fun. And I thank each and every one of you for allowing those things to happen.

Dick

FLASH FEATURES

CRC 5th Annual Show & Sale.....	1
Midget Receivers Revisited.....	3
A Look At The Fifth Annual.....	8, 9 & 12
Winners At The Fifth Annual.....	10 & 11

REGULAR FEATURES

Radio Parts'n'Pieces.....	4
On The Air (From our President).....	5
The Scrounge Box.....	14
Want/4Sale Ads.....	19

REGULAR NOTICES

Deadline Dates.....	2
Dues Information.....	2
General Mailing Address.....	2
Meeting Location.....	2
Contributors.....	5
Membership Notice.....	12

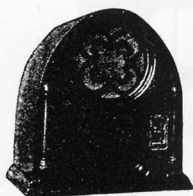
Thanks, Contributors!

Ray Hagrman
 Dick Hagrman Larry Weide
 Don Wick David Boyle
 Alex Scarbough Lee Bruton
 Bruce Young David Tripe

We sincerely thank member
 Lonnie Smith and his
 Denver company

PRESSWORKS

for providing us with a super
 nice looking issue of the
 CRC newsletter.



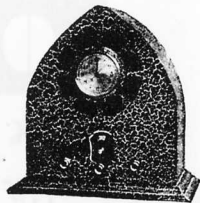
*Atchison
Radio Mfg. Co.*



Republic Radio Co.

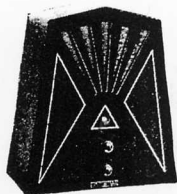


*Woodstock
Elec. Corp.*



*Woodstock
Elec. Corp.*

Transformer Corp. of Amer.

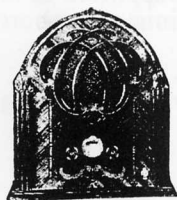


Plymouth Radio Corp.

*Davison-Haynes
Mfg. Co.*



*Colonial
Radio Mfg. Co.*



*Gray-Danielson
Mfg. Co.*



Colin B. Kennedy Corp.



Zaney-Gill Corp.



Midgets (Continued from page 3)

This excerpt from a *Radio News* article written in January 1931 made reference to features of the popular mantel sets. In large degree, the mantel sets are, apparently, all fairly similar in cabinet design, although there are outstanding features to distinguish them apart, such as curved peaks for some, "futuristic" designs in others, one or two with a clock inserted in the face of the cabinet. One manufacturer put out mantels in a dozen different styles to match the furniture of the times, while another inserted a phonograph turntable in the top and thus makes a creditable miniature radio-phonograph combination set.

In the matter of the technicalities of these small sets, there isn't a great deal of difference; none-the-less, every month or so some manufacturer came out with a change or two to furnish an opportunity for a "new line" of receivers. Let's look at an "average" set and see what's in it.

Quoting from the 1931 text: "Here are the specifications and a work sheet for one of the factories: D. C. voltage into filter, 300; d.c. voltage out of filter to -45 plate, 225; d.c. voltage to r.f. plate, 175; d.c. voltage to power detector plate, 50; to -45 grid, 45; to power detector screen, 22 maximum (volume control); to power detector cathodes, 1 to 10; 40 volt surge with tubes removed; a.c. voltage with side transformer secondary, 360; a.c. voltage r.f., power detector, -45; filament, 2.2; a.c. voltage -80 filament, 4.9 volts..

"The speakers, small sized, are ordinarily full dynamic, especially

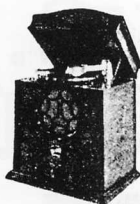
MIDGETS



*Pierce Airo,
Inc.*



*Simplex
Radio Co.*



*Cardinal Radio
Mfg. Co.*



*U. S. Radio &
Television Corp.*

built to match the receiver - special field winding: 2,400-ohm, and a special voice-coil spider peaked approximately 80 cycles. Rola, Magnavox, and Lansing speakers seem to predominate the western factory make-up.

"A. F. couple - resistance couple of special design (not Loftin-White), with 500 volts maximum, designed for flat curve amplification and minimum plate voltage and drain. 300 volts maximum at source.

"R. F. system - two stages sharply tuned screen-grid r.f. with coil designed for maximum gain per stage without the necessity of shields, thereby preventing the losses incurred through the use of shields; three-gang condenser.

"In this, the gain of the r.f. channel is equal to the average receiving set which employs three stages with shields. The interstage coupling is minimized through proper coil design and proper arrangement of coils on the chassis.

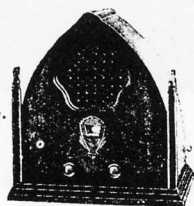
"Oscillation is obtainable and controllable, thus adding considerably to gain and selectivity with a fairly even distribution of stations at the lower end of the dial.

"The volume control is practically perfect, without loss of tone quality at any setting, and there is no absorption or loss of gain at the maximum setting.

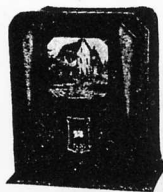
"It controls the r.f. bias, power detector screen, and power detector simultaneously, thereby incurring no overloading of electric strain on any part of the circuit; smooth and positive in operation, not subject to excessive wear and (Continued on page 13)



Paterson Radio Corp.



Advance Elec. Co.



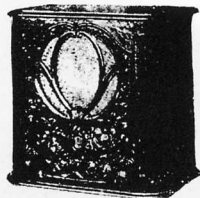
Flint Radio Co., Inc.



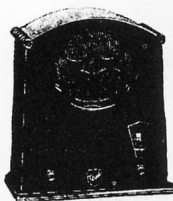
Automatic Radio Mfg. Co.



The Sterling Mfg. Co.



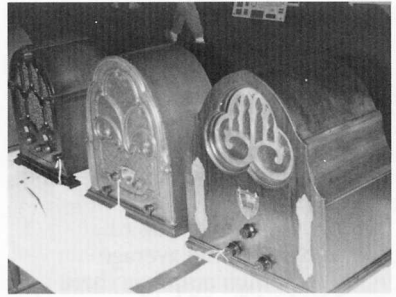
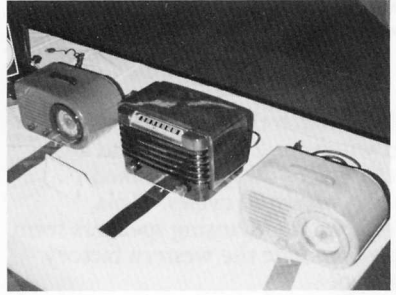
Crosley Radio Corp.



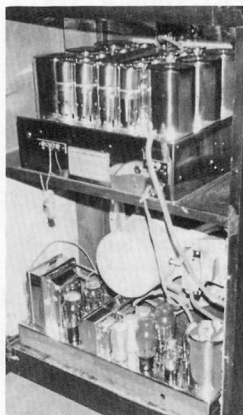
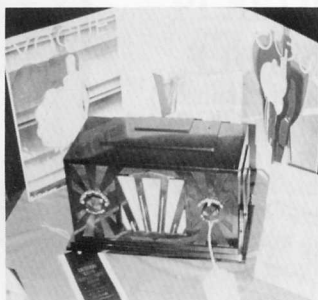
*Griffin-Smith
Mfg. Co., Ltd.*

MIDGETS

C. R. C. FIFTH ANNUAL SHOW



C. R. C. FIFTH ANNUAL SHOW



ART DECO

- 1st *Sparton 557 (1936)*
Riggs Smith
2nd *Automatic Radio "Tom Thumb" (1933)*
Larry Weide
3rd *Zenith 5829 (1934)*
Johnny Johnson

BAKELITE

- 1st *Emerson EC301 (1940)*
Jerry Tynan
2nd *Belmont 6D111 (1946)*
Dan Busetti
3rd *Zenith 4B314 (1939)*
Dan Busetti

BATTERY SET

- (Prior to 1928)
(NO ENTRIES)

BREAD BOX

- 1st *Atwater Kent 12 (1926)*
Bill Schultz

CATALIN

- 1st *Fada 1000 (1946)*
Johnny Johnson
2nd *Bendix 526 C*
Leamon Brooks
3rd *Fada 1000 (1946)*
Ron Smith

CATHEDRAL

- 1st *Angelus (1932)*
Nick Herivel
2nd *Jackson Bell 88*
Ron Smith
3rd *Philco 20 (1930)*
Ron Smith

CHAIRSIDE

- 1st *Stromberg Carlson (1937)*
Barney Wooters
2nd *Stewart Warner*
R111 (1941)
Ron Smith

C.R.C.'s 5th ANNUAL SHOW and SWAP MEET

CONSOLE

- (Full Length)
1st *RCA 29K2 (1941)*
Riggs Smith

CONSOLE

- (Hi/Lo Boy)
1st *Crosley RFL90 (1926)*
David Boyle

CONSOLE

- (Zenith, Scott, Kennedy)
1st *Zenith 12U-159 (1937)*
Barney Wooters
2nd *Scott Phantom Deluxe (1940)*
Barney Wooters

CRYSTAL SET

- 1st *NESCO (1917)*
Bob Slagle
2nd *RCA Radiola I (1923)*
Leamon Brooks

METAL BOX

- 1st *Atwater Kent 55*
David Boyle

METAL CASE

- 1st *Arvin 444 (1946)*
Jerry Tynan
2nd *Arvin 442 (1950)*
Bruce Young
3rd *Arvin 740T (1953)*
Dick Hagman

NOVELTY

(TRANSISTOR)

- 1st *Telegraph Key*
Ron Smith
2nd *Crosley CR9 (1990)*
Ron Harmon
3rd *Radio Shack Battery*
Lee & Carolyn Bruton

NOVELTY (TUBE)

- 1st *Radio Lamp of America (1936)*
Bob Slagle
2nd *Pepsi Bottle (1940-ish)*
Johnny Johnson
3rd *Reprodel AR-950-1 (1950)*
Lee & Carolyn Bruton

PLASTIC

(TUBE)

- 1st *Philco 49-503 (1949)*
Bruce Young

PORTABLE

- (Pre - 1926)
1st *RCA Model 26 (1924)*
David Boyle
2nd *RCA Radiola II (1923)*
Barney Wooters
3rd *Crosley Model 50 (1924)*
Rick & Vicki Ammon

PORTABLE

- (Post - 1925)
1st *Automatic "Tom Thumb" Camera-Radio (1948)*
Rick & Vicki Ammon

TRANSISTOR

- 1st *Motorola (1968)*
Jerry Tynan
2nd *Pochner 304 (Russian - 1980)*
Dave Tripe
3rd *Zenith 3000-1 (1965)*
Jerry Tynan

WOODEN

(TABLE AC)

- 1st *Packard Bell 45 (1935)*
Jerry Tynan
2nd *Philco 40-100 (1940)*
Jerry Koemel
3rd *Silverton (1936)*
Bill Schultz

RCA THEME

- 1st *Radiola 3 & Balanced Amplifier (1924)*
Bob Jensen
2nd *Radiola 3A (1924)*
Bob Jensen
3rd *R-7 (1931)*
Jerry Tynan

SPEAKERS

- 1st *Stewart Warner (silhouettes)*
Jerry Tynan
2nd *Bristol Audiophone Senior (1923)*
Jerry Tynan
3rd *Orchestion (1923)*
Rick & Vicki Ammon

TELEVISION

- 1st *Sorry Portable*
Jerry Koemel

TOMBSTONE

- 1st *Atwater Kent 447 (1934)*
Riggs Smith
2nd *Sparton 738 (1938)*
Jerry Tynan
3rd *Zenith 5829 (1934)*
Johnny Johnson

TUBE DISPLAY

- 1st *Multi-tube Display*
Barney Wooters
2nd *Brig hson True Blues 199s*
Barney Wooters

BEST of SHOW
Zenith 12U-159 (1937 Console)
Barney Wooters

BEST RESTORATION
Crosley RFL90 (1926)
David Boyle

PEOPLE'S CHOICE
Sparton '36 "Bluebird"
Johnny Johnson

BEST RESTORATION
Crosley RFL90 (1926)
David Boyle

PEOPLE'S CHOICE
Sparton '36 "Bluebird"
Johnny Johnson

MORE C.R.C. SHOW



MEMBERSHIP NOTICE



The month/year next to your address on the back cover is your membership expiration date. Where appropriate, please renew at this meeting or see the inside front cover of this journal.

WELCOME NEW MEMBERS

Mike Reynolds

Rock Springs, Wyoming

Cathedrals, Consoles, AC Table Radios, Classics,
Component Psrts, Post-WWII TV, Vintage
Telephones, Paper Goods & Books, Test equipment,
Gadgets/Motors, Meters Quack devices

James Mallory Jr.

Aurora

Crystal Sets, '20s Battery Sets, SuperHets,
Cathedrals, Horn Speakers, Phonographs

Larry Higgins (Phyllis)

Aurora

Cathedrals, Tombstones, Consoles, AC Table
Radios, Classics, Catalins, 50's Plastics

Kevin T. Bendure

Boulder

Battery Sets, SuperHets, Cathedrals, Consoles, AC
Table Radios, Bakelite/Plaskons, Mirrored radios,
Catalins, Character, Novelty, Standard Transistors,
50's Plastics, Classics, Tubes & Transistors, Pre- and
Post-WWII TV, Spinning Disc TV, Vintage Tele-
phones, Paper Goods & Books, Jukeboxes, & more!

Brad Cook

Monument

(No info about collecting interests available)

David Hamm

Aurora

(No info about collecting interests available)

Next Issue's Features

YOUR ARTICLE !!

(Your Editor has run out of fresh ideas)

Midgets (continued)

thus necessitating frequent replacement.

"In the filter system, the speaker field acts as a choke; condensers, 16 mfd. total. This is of the electro-chemical type and is not subject to corrosion or seepage. The voltage rating is conservative, self-healing in the event of punctures and perfectly sealed from moisture.

"The power transformer is conservatively rated, is well insulated, designed for effective cooling, L-shaped core allowing coils to be separated and resulting in better ventilation, mounted on chassis for free air circulation."

So this five-tube set with three screen grids (one is the power detector), a -45, and an -80 can be taken as an "average" mantel type set.

Some designs of receivers varied in the number of r.f. stages with some having two and some three. Some used the Loftin-White circuitry and others resistance coupling in the audio. Some used two and others three stages of screen grid. A few were using -27 type tube instead of screen grid in the power detector circuit. And some shielded while other chose not to increase production cost.

More than 30 factories manufactured approximately the same number of sets with no radical differences to be noted. So, it's not unusual to see why these sets, not only for their size and availability, are so popular. While most agree, the restoration of midgets can be handled without a great amount of technical knowledge, they still can be taken seriously for their appeal

The Scrounge Box

A New Continuing Column

By Larry Weide, CRC Treasurer

Hi...all you CRCers! This month I'd like to write about a subject that will likely be of interest to collectors who restore low-end 1930 radios...the substitution for defective resistance line cords. To begin with, I want to thank Dick Hagrman and his brother Ray for much of the information in this article. In particular, I want to thank them for all the empirical work they did to distill their substitution technique down to a simple procedure and a few component values.

During the 2nd decade of commercially available radios, the cost of owning a receiver began to drop dramatically. One reason, of course, was that by the beginning of the "Thirties" mass production and volume of construction were also being implemented. One of these cost reduction methods was the elimination of the AC power transformer...the most expensive, largest, and heaviest component on a radio chassis.

* Most of us are familiar with the common method of transformerless operation. The high, or "plate" voltage, is derived directly from the rectified and filtered AC line voltage. At the same time, the filaments of the tubes are supplied with the proper voltage by placing them in series with the input AC line voltage. It turns out, however, that during the early years of this filament supply technique, the available tube, setup in typical arrangements, could not by themselves handle the entire AC input line voltage. Examine Fig. 1 (below) to see how the tube filaments were arranged with a resistor to properly distribute the voltage among the tubes.

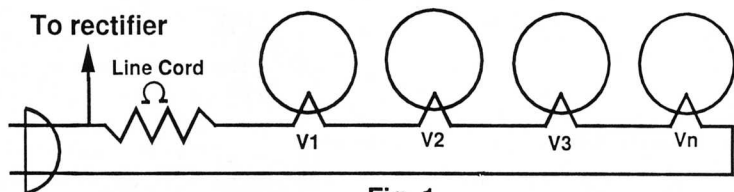


Fig. 1

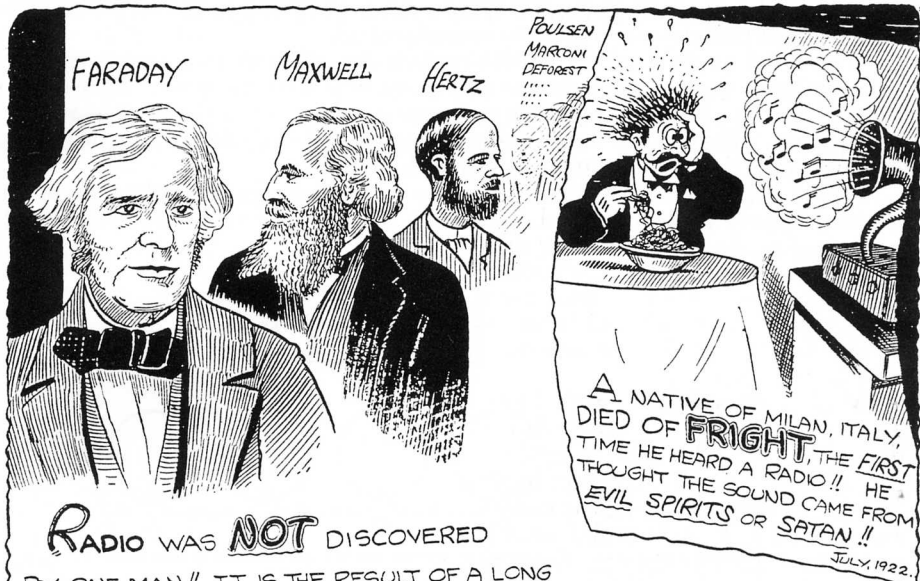
The resistance value of each tube filament and of the resistor are designed so that each tube gets its proper voltage and the resistor gets what is left. The total voltage is the value of the input AC line voltage. Of course, all of this is under the control of good ol' Ohm's Law.

Until newer tube types became available and eliminated the need for the series resistor, this system worked pretty well except for one thing. The resistance component dissipated a lot of heat. There were two common solutions to this problem. The more expensive method was to place the resistor in an electron tube-style, plug-in container known as a ballast tube. This "tube", though it got quite hot, was mounted above the chassis and away from most of the other components. The cheaper method was to use a resistance line cord. This cord looked like any other cloth covered AC line cord of its time, but it also contained a third conductor that was actually a resistive wire (like Nichrome) which acted as the required resistor for this type of radio.

The advantage of the voltage dropping line cord was that it would dissipate the generated heat outside of the radio cabinet and (Continued on pages 16)

RADIO FACTS and ODDITIES

(Send in your Radio Oddities to "Elmo" and see them illustrated)



RADIO WAS NOT DISCOVERED
BY ONE MAN!! IT IS THE RESULT OF A LONG
SERIES OF INVENTIONS AND DISCOVERIES IN
SEVERAL FIELDS OF PHYSICAL SCIENCE !!



Scrounge Box (Continued from page 14)

The advantage of the voltage dropping line cord was that it would dissipate the generated heat outside of the radio cabinet and eliminated one more component usually mounted inside the radio. Alas, it had a major disadvantage. These line cords didn't last long due to the effects of heat on the rubber insulation. In fact, it's rare to find any of these cords in good shape today, even unused ones.. Since frayed and defective cords of this type are very dangerous, you will not find them being newly manufactured.

The usual method of repair is to replace the old resistance line cord with a conventional two conductor one and a suitably sized resistor. This method certainly works, but it puts us back to square one in terms of the troublesome heat dissipation. Then there's also the problem of where to safely mount a power resistor inside a cabinet not designed for such things.

There is another way! Simply put, we can substitute the voltage dropping resistor directly with a capacitor. Using Fig. 2 (below), let's take a look at how this technique works.

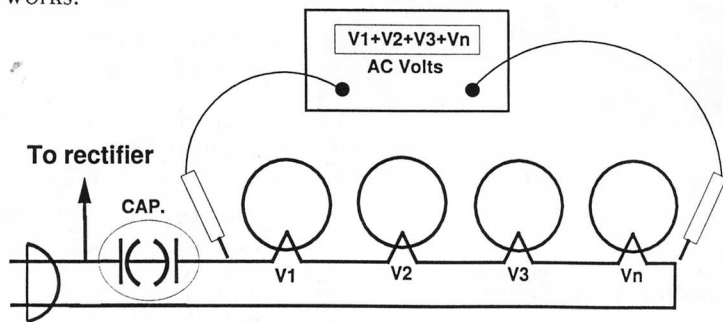


Fig. 2

As the input AC current passes through the tube filaments, it charges the capacitor, first in one direction, then, in the other. The rate of this charging, and the average value of the resulting current flow, is in direct relationship to the filament resistances and the capacitor value. As mentioned above, the voltage across each tube would be calculated with Ohm's Law as:

TUBE VOLTAGE EQUALS CAPACITOR CURRENT TIMES FILAMENT RESISTANCE

Since the trick is to calculate the size of the capacitor for a particular tube lineup (not hard but tedious), we tip our hats to the Hagerman brothers for providing us both specific part values and testing information.

The capacitor must be a special type. It's a non-polarized electrolytic. It's non-polarized to handle the AC current and electrolytic due to the relatively high capacitance value required. Although it's technically possible to use back to back electrolytics in this service, Dick says experience shows the ready-made, non-polarized capacitor is the most reliable type.

In the case where your radio has a tube lineup where the total filament voltage doesn't match an example in Fig. 3, we suggest you use the following testing and capacitor value locating procedure:

- A. Install what you believe to be a suitable size trial capacitor. Remember, this capacitor directly replaces the line cord resistor. (In many cases the line cord resistor had a low resistance tap that was used as a shunt for a pilot lamp. If your set had such a cord, you will need to replace this shunt resistance with a 5 watt resistor whose value can be found in your radio's documentation, or you can select a cord resistance from Fig. 4, then go to Fig. 5 to find the closest tap value.) (Continued next page)

Scrounge Box (continued from previous page)

- B. Attach an AC voltmeter to span the entire filament string as shown in Fig 2. **YOU MUST NEVER LET THIS VOLTAGE RISE ABOVE THE SUM OF THE CORRECT VOLTAGE FOR ALL THE TUBE FILAMENTS OR TUBE DAMAGE MAY RESULT!**
- C. Using the proper SAFETY precautions, plug your radio into power through a Variac or similar voltage adjusting device.
- D. Carefully monitor the voltage in step B as you *SLOWLY* bring the Variac output voltage up towards the AC input line voltage.
- D1. If the voltage in step B reaches the total filament voltage **BEFORE** the Variac output voltage reaches the line voltage, then the capacitor is too big, thus, too much current.
- D2. If the voltage in step B is low when the Variac voltage has reached the input line voltage, then the capacitor is too small, thus, too little current.
- E. Repeat the above procedure, using different capacitor combinations, until your results (the total filament voltage being measured in step B) is within plus or minus 10 percent of the desired value.

Naturally, you're going to have to find a place to install the capacitor. However, since it runs quite cool, you can mount it anywhere where there's room AND safe access to the AC line. Below you will find a source that Dick has used for his capacitors. The ones that Dick found have the advantage of being fairly small, have axial leads and are shrouded in insulating plastic. The alternative to this capacitor is the AC motor start capacitor. This type is much easier to find, but they're likely to be larger.

By-the-way, this technique works equally as well for defective ballast tubes that can't be replaced (I have however, found exact replacements at Antique Supply in Tempe). Once again, you may have to deal with a pilot light shunt in this device as well.

TOTAL FILAMENT VOLTAGE	CALCULATED CAPACITOR VALUE
24 volts	7.2 μ Fd
68 volts	10.0 μ Fd

Fig. 3: Hagrman-Derived capacitor Values for Common Tube Filament Voltage Combinations

RESISTANCE	TUBE LINEUP
135 Ohms	25Z5, 43, 4 (6.3 V.)
160 Ohms	25Z5, 43, 3 (6.3 V.)
180 Ohms	15Z3, 43, 4 (6.3 V.)

(Fig. 4 continued on next page)

Scrounge Box (continued from previous page)

RESISTANCE	TUBE LINEUP
135 Ohms	25Z5, 43, 4 (6.3 V.)
160 Ohms	25Z5, 43, 3 (6.3 V.)
180 Ohms	12Z3, 43, 4 (6.3 V.)
200 Ohms	25Z5, 43, 2 (6.3 V.)
220 Ohms	12Z3, 43, 3 (6.3 V.)
250 Ohms	12Z3, 43, 2 (6.3 V.) 25Z5, 3 (6.3 V.)
290 Ohms	12Z3, 3 (6.3 V.)
300 Ohms	12Z3, 3 (6.3 V.)
330 Ohms	12Z3, 2 (6.3 V.) 4 (6.3 V.)
350 Ohms	12Z3, 1 (6.3 V.) 3 (6.3 V.)
390 Ohms	2 (6.3 V.)

Fig. 4: Line Cord Resistance Values for Specific Tube Lineups.
Note: n (6.3 v.) = quantity of 6.3 volt tubes in radio

TOTAL RESISTANCE	TAPPED RESISTANCE
160 Ohms	24 Ohms
165 Ohms	30 Ohms
180 Ohms	25 Ohms
200 Ohms	25 Ohms
200 Ohms	40 Ohms
280 Ohms	40 Ohms
360 Ohms	80 Ohms
430 Ohms	80 Ohms
510 Ohms	80 Ohms
560 Ohms	80 Ohms
960 Ohms	80 Ohms
1950 Ohms	360 Ohms

Fig. 5: Common Values for Tapped Resistance Line Cord

Source for capacitors: Arthur Petzon (716) 683-7350
3481 Walden Avenue
Depew, NY 14043

Good luck on your next line cord replacement. And, hey, how about sending me an idea for a future *Scrounge Box* article?

The Open Trunk

Wanted:

- J-41 military telegraph key. Has extra contact on rear.
- Early electric motors, open-frame and bipolar construction

Don Wick

Box 25332

Colorado Springs, CO 80936
(719) 598 • 7146

Wanted:

- RCA 9T - any condition. Please call!

Bruce Young

4030 Quitman

Denver, CO 80212
(303) 458 • 7408

Wanted:

- AC adapter for **Zenith** Trans-Oceanic model 3000-1

David Tripe

16773 Macon Street

Aurora, CO 80010
(303) 364 • 2812

4 Sale / Trade:

- Twenty-five tube **Capehart** console model 115P2

Dick Hagrman

3429 West Berry Place

Littleton, CO 80123
(303) 794 • 6674

4 Sale:

- Good **Zenith** TransOceanic A600. Works on all bands. Handle missing. Bunis II page 209. \$45 or trade?

Rick Ammon

(303) 224 • 5446

Wanted:

- Early transistors, novelty transistor sets, and AC novelty sets. Looking for **Sam's** Transistor Service manuals.

Lee & Carolyn Bruton

1140 - E South Reed Street

Lakewood, CO 80232
(303) 937 • 7325

ALL WANT ADS ARE FREE !!

Wanted:

- **Atwater Kent** model F-2 speaker

Alex Scarbrough

2011 East Kettle Ave.

Littleton, CO 80122
(303) 794 • 4347

Wanted:

- **Riders** Volumes 20, 21, 22, and 23
- **Philco** 20 Deluxe...restorable

David Boyle

7169 West David Drive

Littleton, CO 80123
(303) 977 • 6988

4 Sale:

- **Hammerlund** Comet Pro, crystal model with all the coils.
- **RME** - 69, DB20 Preselector & the original speaker & cabinet plus photocopy of its handbook.
- **HRO** Junior, Power Supply, and some coils.

John Peterson

4333 - 9th NE # D

Seattle, WA. 98105-4708
(206) 634 • 0135



CONTRIBUTIONS NEEDED



Seeking articles and stories relating to radio, TV, or associated equipment for use in our publication. Tips, suggestions, hints, and descriptions of restoration techniques solicited

Colorado Radio Collectors

1249 Solstice Lane
Fort Collins, CO 80525-1239



DUES 'R' DUE NOW !!

Continue your uninterrupted subscription,
pay your C. R. C. membership dues now !!



POSTMASTER: FIRST CLASS MAIL RUSH!!

If undeliverable, please return to sender. Thanks!

