

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

September ☺ October 1993

Issue 5

AUCTION!

Nearly two hundred interested persons attended the first Annual CRC Auction last September. There were "Rows and Rows of Radios" new and old. Tons of battery TRFs, novelties, tabletops, and early consoles were ready to be hustled off to a new home. Everyone agreed prices were very reasonable, and, at times, the bidding kind of crazy...piles of radios selling for literally quarters each!

A couple of boxes of odds and ends from the old *Rocky Mountain Wireless Association* were brought out of moth balls and sold, including a 1970s calendar listing names of members from the era. A bunch are still active in the CRC today!

A surprise to all was the vast

amounts of equipment that showed up in the parking lot behind the Southwest Bank. For the first CRC auction, it was a pleasant acknowledgment of the support by the

members and non-members alike.

The gavel fell on some pretty nice "stuff". Sold were a 1936 Zenith Tombstone Model 5S127 (\$110), a Grebe MU-1 with chain-ganged condensers from 1925 for \$150, and a beautiful 1928

Kolster for a "C-Note". Many, many other items went for considerably less than the aforementioned prices.

Gather up all that stuff you haven't touched for a couple of years. **It's auction time again! Let's make the Second Annual bigger yet!**

**ANNUAL
AUCTION**

↔
**Southwest
Bank Building**

1380 South Federal

Sunday Sept. 12th

Auction at 1 PM

Registration Of Equipment
For Sale Begins At 12 Noon

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 the:

C.R.C. Editor

1249 Solstice Lane

Fort Collins, CO 80525-1239

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\$12⁰⁰ Annually

Larry Weide

5270 East Nassau Circle
Englewood, Colorado 80110

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

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 are *Want & 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: (In the hands of the Editor)

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

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:

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Vice President:

Jerry Tynan 642 • 0553 Golden

Treasurer:

Larry Weide 758 • 8382 Englewood

Journal Editor / Secretary:

Rick Ammon 224 • 5446 Ft. Collins

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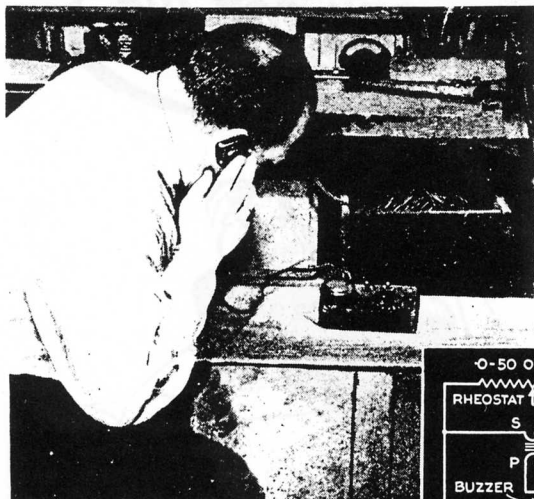
"BUT I'M PRACTICALLY A WIDOW SINCE HOGARTH GOT HIS ECHOPHONE EC-1"



Echophone Model EC-1

6 tubes, 3 bands. Tunes from 550 kc. to 30 mc. Beat frequency oscillator. Bandspread logging scale. Self-contained speaker. Electrical bandspread on all bands. AC/DC. 115-125 volts. ECHOPHONE RADIO CO., 201 EAST 26TH ST., CHICAGO ILLINOIS

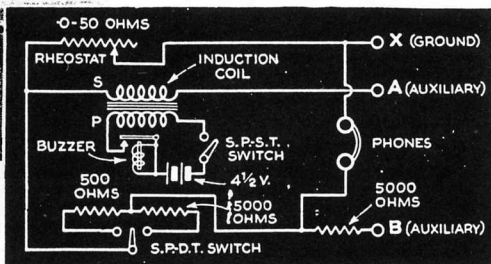
YE OLE JUNKBOX



Pocket-Size Radio Tester

IS EASY TO BUILD
FROM ODDS AND ENDS

The author using the test circuit shown at the left to measure a small resistor



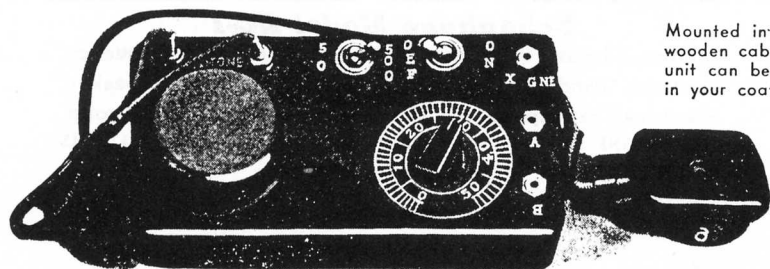
PROVIDING a quick and easy means for measuring small resistances and testing grounds, the unit illustrated forms a handy piece of equipment for the radio experimenter and service man.

The circuit consists of a buzzer and battery, three fixed resistors, a rheostat, an induction coil, two switches, and an earphone. As shown in the diagram, three binding-post terminals (A, B, and X) are provided. To test a resistance up to 50 ohms, terminals A and B are connected together with a short piece of wire, the toggle switch is flipped to the "50" position, and the unknown resistor is connected across terminals X and A. The buzzer is then turned on and the rheostat adjusted until the buzz *cannot* be heard in the earphone. The position of the pointer on the rheostat scale indicates the value of the resistor. For resistors from 50 to 500 ohms, the toggle switch is moved to the "500" position and the same procedure followed, but the scale reading must be multiplied by ten.

In testing grounds, simply connect the ground in question to terminal X, attach terminal A to some other ground, and terminal B to a third ground, which can be nothing more than a screw driver pushed into the earth. When the rheostat has been adjusted to eliminate the buzz, the resistance of the ground can be read directly from the rheostat scale.

LIST OF PARTS

- Fixed resistor, 500 ohms.
- Fixed resistors, two 5,000 ohms.
- Rheostat, 0-50 ohms.
- Single-pole, single-throw switch.
- Single-pole, double-throw switch.
- High-frequency buzzer.
- Induction coil, 1-100 ratio.
- Battery, 4½ volts.
- Binding-post terminals, three.



Mounted in a small wooden cabinet, the unit can be carried in your coat pocket

ON THE AIR

Barney Wooters, C. R. C. President

Many things have changed since I last held this position among radio collectors/historians, including the name of our organization. The current organization includes a wider range of collecting interests, which is good. I think it is good that we don't all like the same things; that way many areas of radio history and technology are represented. In my view, the presentation and documentation of these treasures we constantly seek is the primary goal. The financial aspect of our hobby is secondary.

I began my radio collecting activities in the mid-60s and have seen many changes since then and there will surely be more changes yet to come. Perhaps one day there will be collectors of early computers and cellular phones! So, go out there and do your part and, most of all, enjoy while you learn. Remember also that each of us has knowledge and information to share with others. Pass it on.

Barney and members, there are computer collectors already! L & W Books has a new picture and price guide just like Evolution I & II and Bunis for computer and calculator collectors. My copy shows the "Scelbi Computer Consulting 8H" introduced in 1973 (predating the Altair) sells today for up to \$11,000! Mirror/catalin collectors are in the wrong hobby! - Editor -

THE ELGIN REPORT

A letter to us all from Dick Hagrman from Elgin on official Holiday Inn stationary!

Several thousands of dollars worth of fine old radios left Illinois on Saturday, August 7. Most of these were headed to Colorado, some to Washington state, and others to Missouri.

These radios and associated equipment were bought by the following CRC members who attended the ARCI show there: Steve Axelson, Jim Berg, Lee and Carolyn Bruton, Dick and Anne Hagrman, Ray and Francie Hagrman, Johnny Johnson, Jay Malkin, Bob Slagle, Dave Tripe, Larry and Dorthy Wiede, and Bruce Young.

We all had a great time. *(Nice assemblage representing the CRC!!! - Editor -)*

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Thank You!!

A special thanks to Jim Mise for providing a 1943 service booklet "Popular Science Second Radio Annual". Future FLASH issues will contain these repair pages as you see on pages 4 and 7.

We sincerely thank member
Lonnie Smith and his
Denver company

PRESSWORKS

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

RADIO HISTORY

Books at the Denver Public Library

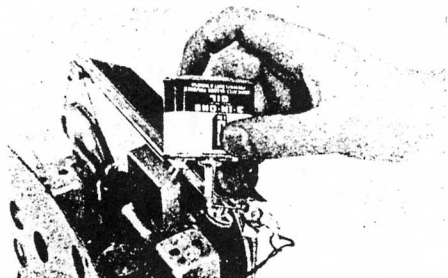
If you're looking for a source of historical studies about our hobby, these books are *available for free* at DPL. Good reading! - Editor -

- Lewis, Thomas S W 1991
Empire Of The Air: The men who made radio
- Ely, Melvin Patrick 1991
The Adventures Of Amos 'N' Andy: a social history
- Sievers, Maurice L 1991
Crystal Clear: vintage American crystal sets
- Schiffer, Michael B 1991
The Portable Radio In American Life
- Douglas, Alan 1988
Radio Manufacturers Of The 1920'S
- Wolff, H G 1987
Radio, A Blast From The Past: from 1927 to 1948
- Douglas, Susan J S 1987
Inventing American Broadcasting, 1899 - 1922
- Leinwoll, Stanley 1979
From Spark To Satellite: a history of radio communications
- Hill, Jonathan 1978
The Cat's Whisker: 50 years of wireless design
- Alth, Max 1977
Collecting Old Radios And Crystal Sets
- Aitken, Hugh G J 1976
Syntony And Spark: the origins of radio
- Campbell, Robert 1976
The Golden Years Of Broadcasting: a celebration
- McMahon, Morgan E 1975
A Flick Of The Switch, 1930-1950
- Hilbrink, W R 1972
Who Really Invented Radio?
- Settel, Irving 1967
A Pictorial History Of Radio
- Gunston, David 1965
Marconi, Father Of Radio
- Hawks, Ellison 1927
Pioneers Of Wireless
- Briggs, Asa 1961
The History Of Broadcasting In The United Kingdom
- Dunlap, Orrin Elmer 1951
Radio & Television Almanac: men, events, inventions
- Maclaurin, William 1949
Invention & Innovation In The Radio Industry
- McNicol, Donald Monro 1946
Radios Conquest Of Space: the experimental rise
- Institute of Radio Engineers 1945
Radio Pioneers, 1945: commemorating the Radio
- National Broadcasting Co. 1944
The Fourth Chime
- MacLeish, Archibald 1944
The American Story: ten broadcasts
- Coe, Douglas 1943
Marconi, Pioneer Of Radio
- Chase, Francis Seabur 1942
Sound And Fury: an informal history of broadcasting
- Tooley, howard 1941
Radio Guild Plays: a collection of radio scripts
- Henry, Robert David 1941
History Makers: eight radio plays
- DeSoto, Clinton B 1936
Two Hundred Meters And Down: the story of amateur radio
- Schmeckebeier, Lawrence 1932
The Federal Radio Commission: its history, actions, decisions
- Clarkson, Ralph Prest 1927
Hysterical Background Of Radio

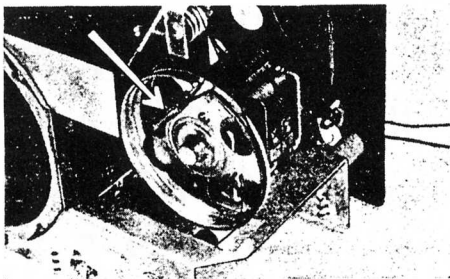
Servicing Your Radio

DIAL troubles often can be corrected easily. Many of the older AC-DC midgets have a direct-drive dial, in which the tuning knob is mounted right on the shaft of the tuning condenser. The only thing that can go wrong with this type is a loosening of the

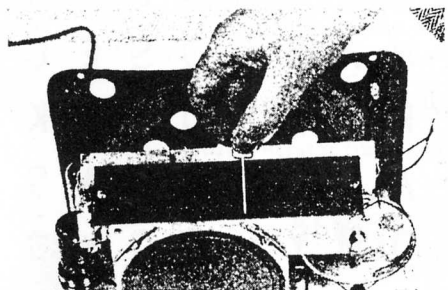
knob, which is remedied by tightening the set screw. Slightly more complicated are the friction drives using a belt or cord. The photographs below show various troubles encountered on these sets, and how they can be eliminated.



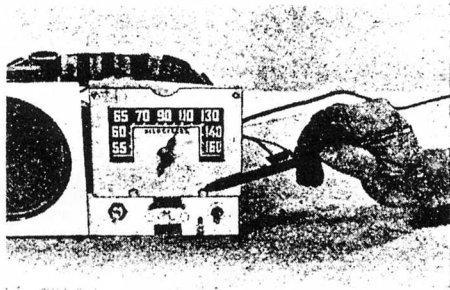
A squeaky slide-rule dial is remedied easily by a little oil on the wheels over which the dial cord runs. Oil very lightly with a light lubricant, being careful not to get any oil on the cord itself



In some friction-drive dials, the cord is kept taut by a spring behind the dial plate as shown above. To tighten the cord, it is necessary only to remove the spring and make another knot in the drive cord



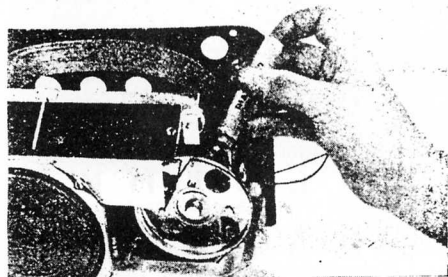
If the pointer is not calibrated properly with the frequency marks on the dial, it is an easy matter to move it to the correct position. Once it is set properly for one station, it will be correct for all



To get at a spring behind the dial plate as shown in the photograph above, it is necessary to take off the plate. To do this, loosen the two hex nuts indicated by the pencil in this illustration

A slipping belt, when it is not too serious, can be remedied by applying a special wax obtainable in stick form. Rubbed lightly on the belt as shown, it usually is found to give a smoother-working dial

If moving plates touch fixed plates in a tuning condenser, loud static is produced whenever the dial is touched. On most condensers this can be corrected by adjusting with a screw and lock nut



WORD FIND

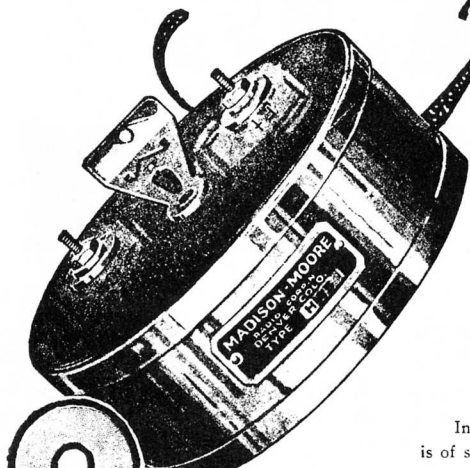
By Rick Ammon

You've asked for another puzzle since the one I put into the newsletter a couple of years ago. This diagram has hidden *BRAND NAMES* of receivers from the 1920's through the present. Words may lie across, down, diagonally, or backwards, but always in a straight line. Words may overlap and letters may be used in more than one word. As you find each word, draw a circle around it. If you get stumped, I'll list the forty-seven names (two of them abbreviations)....next issue. Good fun!!

T N E K R E T A W T A F H T I N E Z
T S T R O M B E R G C A R L S O N R
S M E I S S N E R L A R I M D A F Z
L A R R E N R A W T R A W E T S E J
L G E N O T E U R T U S K A S N D A
A N M R F F R E S H M A N C O S E C
H A S D A Y E L S O R C Q S O I R K
S V C O C L E D O R A G R N C D A S
R O G R E G E N C Y O E Y O F Q L O
A X E A R O N O S D M S P A R T O N
M G T O L I P E B E R G X I D N E B
R A L O R O T O M N R N Q F A L R E
E K E L L O G G L N E A Q R O F O L
V T T O C S D A Q E R F L E U T Z L
L R E L V A R T T K A Y R E L D A A
I N I V R A B L D E W A L D F M R D
S H E A T H K I T Q K D A R M A K A
P O F W E S T I N G H O U S E W A F

New

THE TRANSFORMER THAT INSURES RECEPTION AT ONE POINT ONLY ON THE DIAL. THIS HAS NEVER BEEN DONE BEFORE.



THE MADISON-MOORE One-Spot TRANSFORMER JUST OUT!

In this new instrument, the intermediate frequency is of such high value that the reappearance of any station throughout the entire broadcast range is eliminated. Reception at more than one point on the dial, the feature that has annoyed every owner of a set, has been completely conquered by this latest radio engineering achievement.

This new MADISON-MOORE **ONE-SPOT TRANSFORMER** is even more wonderful than its predecessor, because it gives **POSITIVE SELECTIVITY, HIGHER QUALITY, and GREATER DISTANCE.** Yet, owing to increased production, the price for the new instrument is lower than for the former model.

Surpassing radio satisfaction is yours if you install MADISON-MOORE **ONE-SPOT TRANSFORMERS.** They are supreme in the realm of Radio.

[Ask your dealer. If he can't supply you, write us.]

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THE COUNTRY LIFE BOOKS, GARDEN CITY, NEW YORK

Radio News • January 1927

Manufactured on Federal Blvd - Denver

C.R.C. AUCTION

Immediately Following
Our September 12th Meeting

GUIDELINES

1. Participants need NOT be members of the Colorado Radio Collectors.
2. Each item must be *clearly tagged* with the seller number, item number, and condition.
3. "Opening Bid" will be five (5) dollars.
4. A ten (10) percent commission will be received by Colorado Radio Collectors.
5. Bidders will be able to "Buy-Back"...a five (5) percent commission will be charged.
6. Participant will be allowed to enter as many lots as they wish.
7. The Colorado Radio Collectors takes no responsibility as to condition implied, taxes, or any other liabilities.

If you have any items you'd like to put into the auciton or want more information, please call our Auction Chairperson...

Dick Hagrman
(303) 794•6674

\$75,000.00 worth of standard merchandise at 75% off!

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Going Big!

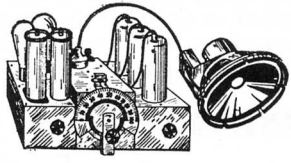
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 TRIPLE SCREEN-GRID
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 MATCHED DYNAMIC
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Housed in this gorgeous walnut Gothic Cabinet 16 1/2" high, 14 1/2" wide and 10 1/4" deep. Only

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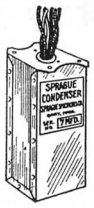


Chassis uses 3-224, 1-245 and 1-280 tubes and is equipped with matched dynamic speaker. For chassis and speaker. Tubes, \$2.50 extra.

Dealers and Servicemen!

Be prepared to meet the great demand for this popular radio set during the holiday season. Equals the performance of any console receiver and yet you can sell it for less than \$75.00 completely installed and still double your investment. Order your sample to-day and avoid the last-minute rush.

REPLACEMENT Condenser Blocks



- Peerless Courier, as illustrated, ea. \$1.75
- A K 37 4.80
- Majestic B 2.95
- Victor R32 3.25
- R C A 18, 22 and 51 1.50
- R C A 17 4.95
- R C A 41 4.25
- R C A 60, 62 5.95
- Zenith 11E 3.25
- Brands B15 2.95
- Kolster 6H 2.95
- Kolster K21 2.50
- Kolster K43 3.25
- Kolster K22, 20, 42 3.25

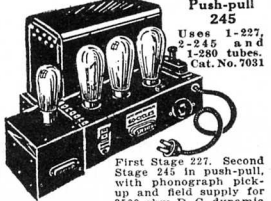


We Carry a Complete Line of Microphones, Turntables, Pick-ups and Amplifiers for Public Address Systems and Theatres.

Universal Baby Mike. A real microphone, single button, with covers and 25 ft. of cable. List, \$7.50. Our Price, \$4.50.

Caryola Synchronous Motor
 Complete with turn-table. Silent, sturdy and compact, only 1 1/4" thick. No brushes. Only \$4.25.

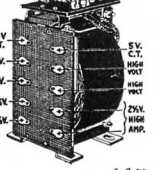
Bosch Power Amplifier



Push-pull 245
 Uses 1-227, 3-245 and 1-280 tubes. Cat. No. 7031
 First Stage 227. Second Stage 245 in push-pull, with phonograph pick-up and field supply for 2500 ohm D. C. dynamic speaker with or without input transformer (specify which). Also furnishes filament and plate voltage for 224, 227 tubes. Can be used to convert any battery set into an up-to-date A. C. receiver with 245 PUSH NET PRICE, \$19.50

Power Transformers For all Standard Sets Carried in Stock

LOW VOLTAGE — 105V. 65 100V.



- Model Illustrated for A. C. Dayton Navigator and other sets using 224, 227, 245 and 280 tubes, \$3.85.
- Freshman Q \$ 6.75
- Freshman QD 7.85
- Philco sets 3.75
- Zenith 22, 25 3.25
- Radiola 44, 48 4.95
- RCA Double Choke95
- AK46-42 Power Pack 11.50
- AK46 Power Pack 15.00
- Sonora B33 4.75
- RCA Audio 7.85
- Earl 21, 22 2.25
- Radiola 60, 62 5.95
- Kolster K20 3.25
- Stromberg-Carlson 642 3.95
- Step down 220 to 110V 3.95
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Ward-Leonard, Aerovox, Ohmrite and Hy-watt wire wound resistances from 25 to 250,000 Ohms for all standard sets at 20 to 50c each. Full description in our catalog.

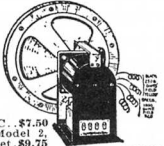
Centralab, Frost, Yaxley, Clarostat, Bradley-ohm, Carter and Electrad Variable Volume Controls and Potentiometers

All sizes from 2 to 500,000 ohms carried in stock for replacements in all standard sets. Prices from 20 to 40c each. ALSO Wire Wound and Carbon pigtail resistances from 10 ohms to 5 megohms at \$1.50 per dozen.

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- Peerless 17A, in cabinet, \$11.50



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20 HUDSON ST., NEW YORK, N. Y.

TERMS:—20% with order, balance C.O.D. 2% discount allowed for full remittance with order only.

The Scrounge Box

A Continuing Column

By Larry Weide, CRC Treasurer

Hi...all you CRCers! The subject for this month's 'Box is AM Superheterodyne radio alignment hints and techniques. As usual, I'd like to give thanks to those who contribute information on the subjects I write about. This month I once again want to thank ole, reliable Dick Hagman for his very valuable input.

As most of us know, the vast majority of radios we're apt to run into are "Superhets", and thus, demands most of our attention. So, I think a little theory at this point would be appropriate in order for the problems and techniques to make better sense and perhaps help you with your diagnostic techniques.

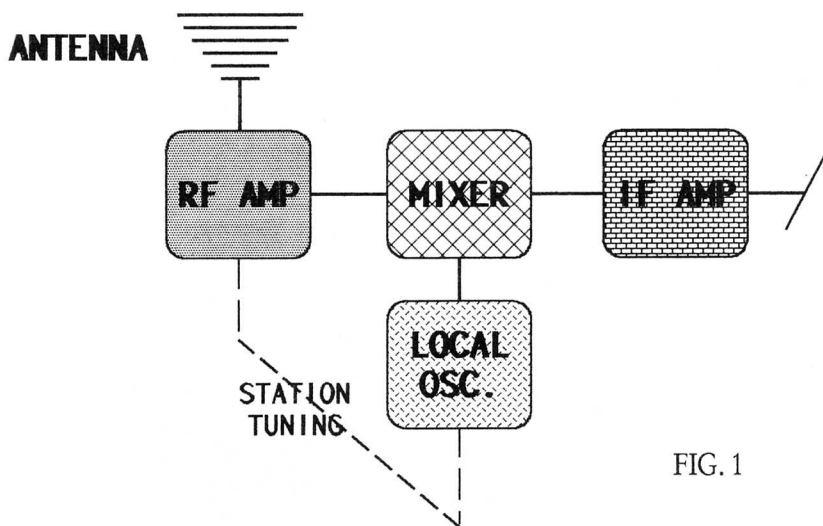


FIG. 1

Above, Figure 1 shows a very general description of the R.F. circuitry or "front-end" of a Superheterodyne radio receiver. Signals from the antenna go to a selective R.F. tuning circuit (sometimes an actual amplifying tube if this is a "better" radio). The output of this stage sends the selected frequency, an individual radio station, to a mixing circuit. Here, the R.F. signal is mixed with a signal from an oscillator that is tuned concurrently as you tune the radio. Typically, this is done with a two section tuning capacitor - one section for the R.F. selection, and one section for the oscillator tuning. The resultant output of the mixer is the DIFFERENCE frequency, or heterodyne, between the two input frequencies and consequently is much lower in frequency than the original radio station. In addition, because the oscillator frequency changes as you tune in different stations, the difference or mixer output frequency is ALWAYS the same. This signal, which still contains the original radio station contents, is then sent on to the next stages for further amplification, audio detection and speaker driving.

As such the Superheterodyne circuit has two very distinct advantages over the older style radios such as TRF or regenerative receivers. First, it means that none of the circuits following the mixer require any tuning adjustments because the mixer output frequency is always the same - as just described. Secondly and most importantly, because of the nature of tuning circuits and a characteristic of them known as "Q" or quality, the lower →

frequencies generated by the "Superhet" mixer circuit can be tuned more sharply than the original R.F. signals.

- #1) AM Band Tuning Range in KHz (as of 7/1/91):
535 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1705
- #2) Local Oscillator Tuning Range in KHz:
80 145 245 345 445 545 645 745 845 945 1045 1145 1290

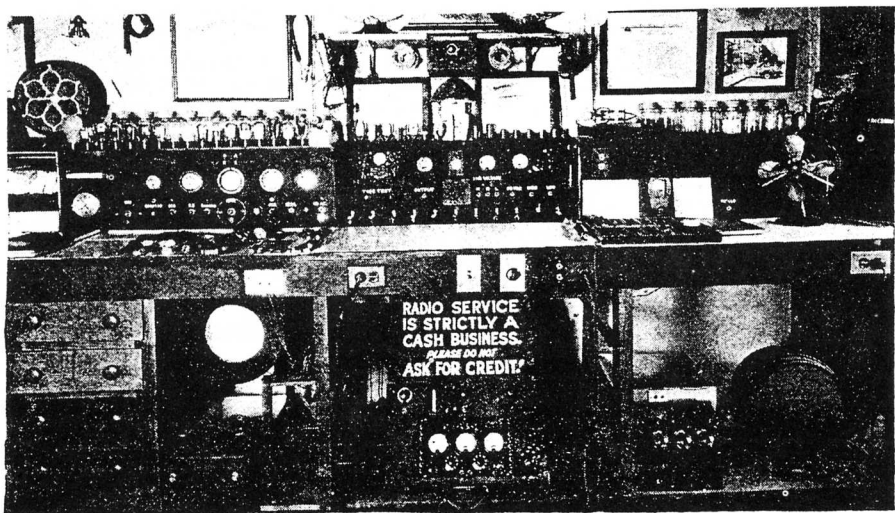
Fig. 2

To better understand how the output of the mixer always remains at the same frequency, take a look at Fig. 2 above which shows the range of frequencies that an AM radio can tune in (band #1). In addition, the chart also shows what frequency the oscillator in the radio will be set to for any given radio frequency that you have tuned in (band #2). Simply draw a vertical line between bands #1 and #2 to verify this. Notice that no matter what station you're tune to the difference between the two bands is always 455KHz.

So, that's what comes out of the mixer circuit. That is, a radio signal which is an exact replica of the original radio signal, but now it's always at 455KHz regardless of what it's original frequency really is. This mixer output frequency is called the I.F. or intermediate frequency. In the past there were a number of I.F. frequencies used, but 455KHz has become the modern standard - we'll discuss why in a moment.

So what's the big deal about aligning a radio? Well, actually it's not tough at all. In fact if you talk to guys like Dick Hagerman (and maybe even me), they/we will tell you that in most cases you can align a radio without any tools other than a screw-driver. However, what if you have to replace a frequency critical component, or the radio was "butchered" by someone else? In cases like these you really should follow the prescribed procedure for adjustment. In practically all cases, Rider's and Sam's radio circuit documentation manuals show you the exact procedure for each radio. After a little experience you will come to realize that the alignment instructions are essentially the same for all Superheterodyne sets, and in general they go like this:

- 1) Using a signal generator tuned to the mixer output frequency for your →



The photograph above, which was submitted by the Radio Service Company, Cleveland, Tennessee, shows a neat, orderly and complete test bench for servicing radio receivers. A photograph of the company's service car appears in the upper right-hand corner. RADIO NEWS will pay \$10 for similar photographs accepted for publication which are submitted by bona fide service men

particular radio (again, the modern standard is 455KHz), adjust the I.F. tuning transformers for maximum signal strength at this frequency.

2) Next, align the dial. The documentation often gives you an absolute mechanical reference by telling you what the dial frequency should be with the tuning capacitor fully opened or closed. After you've verified that the dial is mechanically in the right place, tune the radio to the high end of the band around 1400KHz. Adjust the radio's oscillator frequency control to bring the signal generator signal, now also tuned to this same dial frequency, in correctly. Alternately, you could use a radio station in this vicinity as your signal in order to do the oscillator adjustment.

3) Finally, while using your signal generator, or with the radio tuned to a station around 1400KHz, adjust the R.F. tuning capacitor trimming adjustment for maximum signal.

Now I hear you saying, "Yea we agree, no big deal". BUT, there are things that can and do go wrong (ah, finally the hints!). For example, what happens if the I.F. transformers are tuned to a significantly different frequency than the desired one. Or, what happens if the oscillator is adjusted (mistakenly) so that, although there is still the same difference frequency at the mixer output, the oscillator operates at a frequency range that is higher than the R.F. frequency rather than lower as in Fig 2.? Or, how can you tell if the oscillator is working, or if signals are getting through to the I.F. stage? Go get your Maalox and we'll talk about it.

In the beginning day of superhets the I.F. frequency was commonly much lower than the final standard of 455KHz. The idea was to get the sharpest or most selective tuning as possible - remember the general rule is, the lower the frequency the more selective the tuning. Well, as you know, down inside of every mink coat there's at least one hair ball. So it is with the Superheterodyne circuit. The "gotcha" with very low I.F. frequencies is that it is VERY difficult to keep unwanted and audible signals from occurring in the mixer between input frequencies that are very close together. It was finally determined that the best trade-off between pricey station selectivity and less expensive circuitry was around 455KHz. Then too, a standard of any sort made it much easier on the component manufacturers and circuit designers.

To further complicate things, the mixer circuit actually develops FOUR output frequencies; the R.F. input frequency, the oscillator input frequency, and both the sum AND difference of these two input frequencies. The reason we normally only get the difference frequency in the output, as explained above, is that the output of the mixer is tuned to this difference frequency by the I.F. transformer circuit, and the other three frequencies are suppressed. Anyway, that's what is supposed to happen. If any component fails such that the unwanted frequencies leak through then you can have the heterodyning effect (mixing) being done on signals you don't want.

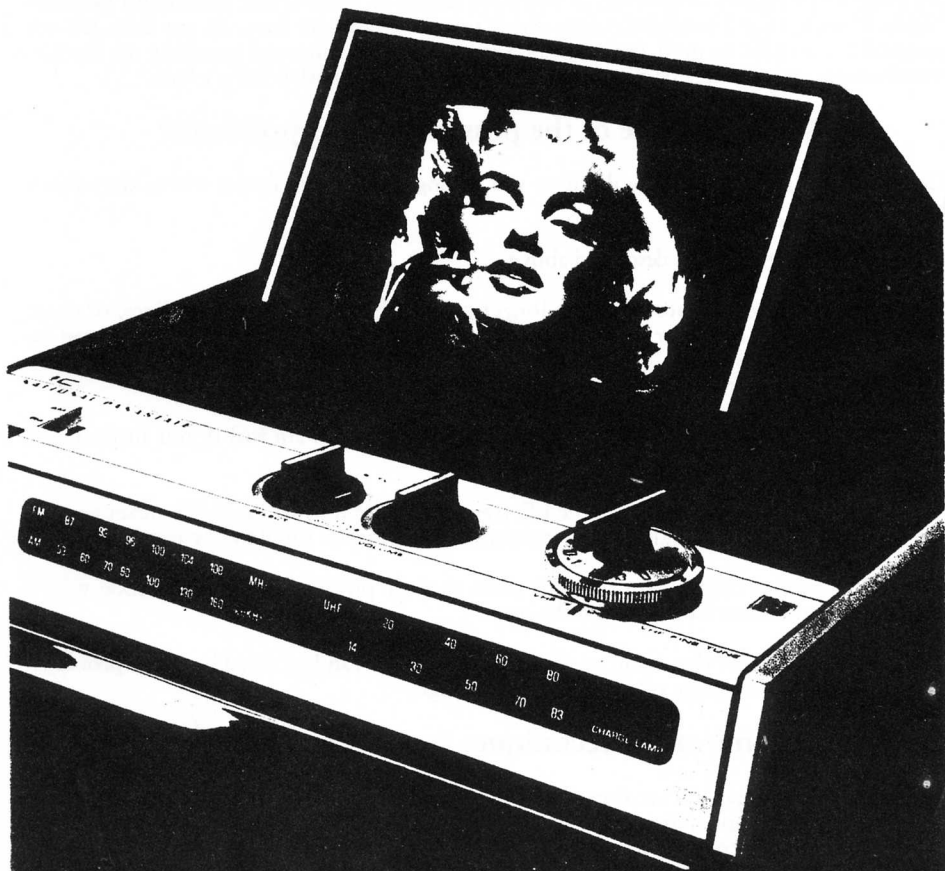
Perhaps now you can see how important it is that in order to avoid unwanted audible images (heterodynes between various signals) it's critical to make sure that the oscillator is tracking in it's proper range BELOW the R.F. frequency range, AND the I.F. transformers are tuned to their proper design frequency.

What are some of the symptoms of a mis-aligned or faulty front-end?

(In no particular order)

- ✓ Stations are weak
- ✓ There are no stations
- ✓ Stations come in at the wrong place on the dial
- ✓ Stations can be heard in more than one place on the dial
 - ✓ Stations only come in at one end of the dial
 - ✓ Stations tune in and out with whistles

When trying to decide if the problem is component failure or mis-alignment, you should first look at the history of the radio. Typically old radios are put on the shelf because they aren't worth fixing. So component failure is likely (Continued on page 16)



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the cause of problems. However, if you have reason to believe that your radio has been "fiddled" with, then I would certainly check out the alignment first. In any case, it's not unusual for a radio to drift out of peak alignment over time and touching up the I.F. transformers and the R.F. trimmer for maximum signal strength couldn't hurt.

What are some of the possibilities for problems?

Generally it's anything that will allow the wrong frequencies to get where they don't belong:

- Mis-alignment as described above.
- Defective capacitors that no longer provide bypassing of voltage lines, or cause the oscillator and/or mixer to tune incorrectly. Since these kinds of problems can be tricky and/or intermittent, some folks will wholesale replace capacitors in an old set - particularly the paper ones.
- Missing tube shield(s). You can experiment with tin foil if you suspect this is a problem.
- Defective components in the I.F. transformer circuit that cause the mixer to tune too broadly. Capacitors inside the I.F. transformers themselves shouldn't be overlooked.
- Replaced components and/or wires that are physically oriented wrong which cause signals to radiate back through the set.
- Don't forget that weak or no station situations can be caused by other problems such as faulty AVC voltage or a problem audio stage.

What are some of the techniques to checkout various circuits?

If you suspect that the local oscillator is not working, you can use the oscillator in another radio by simply putting a test radio next to the suspect radio. Usually you can get enough oscillator energy to radiate from one radio to another to cause audible effects. So, if you can get at least some output from the defect radio as you randomly tune the test radio, it's a good bet that you've got a radio with a bad oscillator.

If you don't have a test oscillator to align your I.F. transformers, you can once again try using the oscillator in an adjacent radio. Look at fig. 2, bands #1 and #2. You will notice that when a radio is tuned to 910KHz it's oscillator will be at 455KHz. Therefore, you should be able to get enough radiation from the test set to provide an alignment signal. There are two things to watch for if you use this "poor man's" test oscillator. First, the test radio itself needs to have the correct oscillator frequency. If it does not have an I.F. of 455KHz (as this example does) then you will have to re-calculate what the correct tuning should be to get the desired output. Secondly, since a local oscillator does not have audio modulation, like a real test oscillator would, you will need to monitor the suspect radio's AVC voltage as an indication of alignment.

Of course there is much more detail, theory and techniques concerning the subject of Superheterodyne radios than I've covered here. You'll find lots of information in libraries, old and new book stores, at swap meets and by asking questions. So, if you're just starting out with superhets, you might want to try to dig into one of these babies and learn as you go. Hey, what the heck, it doesn't work now anyway! **ΔΔ**

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EVOLUTION

of the

RADIO

(Volume Two)

By Rick Ammon

L-W Book Sales \$24.95 softbound (CRC club price \$15.75)

When, in 1991, L & W Books published the first of the *Evolution* volumes, we had an excellent reference for dating and placing values on our radio hordes. Now Volume Two has been released. We waited with some apprehension because, as in the motion picture industry, the sequel might not be up to our expectations. Happily, I report, as in "Aliens" or in, at least, the second "Rocky" movie, Volume Two is better than the premier edition!

With as many pages as *ER1* but with only one-fourth as many old advertisements filling the first one hundred pages, *ER2* gets right to the many full-color photos of collectible radios common and unusual. Over six hundred radios

REVIEW

appear to have been chosen with picture quality, i.e. its contrast, in mind which gives a better look at the radio's details. There's a visual consistency between the pages the first tome lacked. Maybe

because this newer volume has bigger and fewer pictures per page with no more than four and often only two or three, enhancing the detail and fun of looking at radios we wish we'd found.

Although there's always discussion about the validity of any price guide, the *Evolution Two's* prices appear "typical" from the sought-after Atwater Kent Model 5 (breadboard) at \$7,000 to \$30 for an Emerson Model #587-A. There were only a few surprises like the 1957 Motorola Model 6X31, at \$200 and the 1938 Silvertone Model 6110 at \$1,000! The former is only a moderately-unique transistor while the latter is truly different, looking like a burned out log in the forest! I found a cathedral, the 1934 AK 944, like the one that's been sitting at my parent's home on an attic shelf for the past 35 years, is worth, they say, three times what I figured! Funny how suddenly those old sets become much more important! But isn't that why we buy these books?

There are bunches of radios in *ER2* most of us have rarely seen and numerous examples we've never seen like the 1927 Bush-McCoy Beetle Crystal Set (\$700). Shown also are several grandfather clock radios and dozens of not so "average" sets.

Last time the huge list of contributors included two CRC members, Johnny Johnson and Jim Berg. Ray Kushnir joins only Jim on the new shorter roster. (I'd like to see more CRC member's names printed in these books!)

If you're a transistor/novelty radio collector, save your coins. If you want to see the first generation flivers from the 20's, stay with Alan Douglas. But if you like everything in-between, *The Evolution of the Radio Volume Two* is a satisfying MUST!

(Just before we put this issue into the press, your Editor got an offer in the mail, so I'm passing it on...)

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July Meeting Minutes

Picnic/Swim: The picnic was held July 11th where a bunch of families, SOs, and others with an interest in the club joined Larry at the Weide residence for the annual CRC pot luck and swim. Fun, food goodies, swap stuff, a "DX Contest", and a "mystery raffle" greeted all who attended. As usual everyone enjoyed the party while the kids swam in Larry's immaculant pool. Again, we thank the Weides for opening their home to our group!

An extremely short meeting offered information about the September Annual Auction (details found elsewhere in this issue). after which we all headed to the "open trunks".



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

The Open Trunk

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Rod Lauman

8 Sunset Circle
St. Johnsbury, VT 05819
(802) 748 • 4893

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- Transistor radios in very good condition with "CD" marks ("▼") at 1240 Kc and 640 Kc.

Rick Ammon

1249 Solstice Lane
Fort Collins, CO 80525-1239
(303) 224 • 5446 after 7pm

TRULY BITTEN BY THE BUG....

We'd like to welcome all new CRC members, but few seem as eager as Tom Pouliot of Lakewood who wrote us saying...

"I have only been collecting for about 1 month but have purchased 16 radios so far (I better slow down!)."

Considering his collection includes, among others, a Michigan Regen, Crosley 3R3, Freed Eisemann FE15, Airline TRF with horn speaker, Stromberg Carlson Treasure Chest, RCA 16, Philco 20, etc., etc., we'd like to see him slow down! There won't be any radios left! - Editor -

Wanted:

- Good complete chassis for **Zenith** tabletop, chassis # 5528 or # 5647, Models 5R303, 5R312, 5TR316, 5R317, 5R318 and 6D312, 6D316, 6D317, 6D337. Don't need knobs or push-buttons.

Dan Busetti

P. O. Box 706
Bennett, CO 80102
(303) 398 • 8251 (W)
(303) 644 • 4202 (H)

Wanted:

- Tube Tester
- A "Buddy" with repair and technical advice!

Sandra Sendtko

4827 Lowell Blvd.
Denver, CO 80221-1025
(303) 477 • 3569

Wanted:

- **Majestic** (Grigsby-Grunow) Model 92 HighBoy Console (pictured in Bunis II, pg 109) in good and working condition.
- The following **R.C.A.** parts:

Condensers: UC1014 UC1015
UC1631 UC1632 UC1635
UC1803

Grid Leak: UP1719

Ammeter: UM530

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