



The FLASH!



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

Volume 18, Issue 1

The 01/14/07 CRC Meeting is in Castle Rock

January, February 2007

What The %*&(*&*... is "Q"

By David Boyle, Pres. CRC

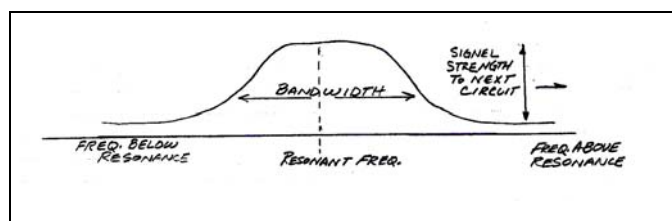
We studied tuned circuits in the March/April FLASH. In that article the concepts of tuning,, resonance, and the various conditions that might affect sensitivity and selectivity. In fact, a slight mention was alluded to the necessity to understand internal resistance in tuned circuits and to reduce it accordingly. That introduces a new concept important to tuned circuits and inductors which is called "Q". In a sense, Q can stand for *Quality*. Mathematically, $Q=Z/R$ Please refer to the aforementioned FLASH article for a concise definition of all these terms and math. For the purposes of this discussion we will only address the inductive reactance, in ohms, component of Z (temporarily ignoring the capacitive reactance component) and R is the resistance in ohms. Therefore, the Q of a individual inductor or an entire tuned circuit is considered as the ratio of its reactance in ohms to its resistance. Example: a coil has a inductive reactance of 120 ohms and a dc resistance of 1.2 ohms -- the Q would be 100. Q has no unit of measurement. Q is usually applied to inductors because the Q of capacitors is usually considered negligible. Old radios can be an exception to this -- more on this exception later.

Tuned circuits in old radios are subjected to the combined affects of aging, abuse, and/or negligence. This is where we as service technicians or amateur "dorkarouderers" need to understand what is going on in the radio in front of us and possibly help in our repairs to bring the radio back to reasonable life.

Unwanted resistance in tuned circuits will result in decreased sensitivity and selectivity or just flat out prevent operation. A few definitions before we continue:

tuning range.

- Sensitivity: how well the radio picks out distant or weak stations. Its kinda a volume thing.
- Bandwidth: tuned circuits are designed to resonate at a given frequency such as in if transformers (260kz, 455kz, etc). These circuits have a response curve associated with them as shown below:



The shape of the bandwidth curve, whether "peakie" or broad is designed to provide adequate band pass (only the desired frequencies) which contains the audio information in the form of a modulated signal on to the next circuit. Unwanted frequencies are rejected and left behind!

What does this all mean? Well, Q affects all the above described parameters. Which leads us to my next cogitation -- many old radios, especially those with complicated tuning circuits, multiple bands, high tube count, and whatever may never approach "like-new" performance no matter what our servicing endeavors have been. Materials of construction available between the 1920's and the 1950's were really quite crude compared to contemporary plastics, insulation materials, metal alloys, and modern manufacturing methods and processes. When the older insulation materials degrade sneaky little resistive paths develop which will change circuit parameters, hence performance. Increased resistance in old and/or poor solder joints or mechanical connections, even ages of accumulated un-removable dirt and grime result in detrimental circuit changes. This is where Q comes into the discussion.

- Selectivity: the ability to clearly tune-in and distinguish individual stations across the entire

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COLORADO RADIO COLLECTORS ANTIQUE RADIO CLUB

Founded October 1988

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Volume 18, Issue 1

January/February 2007

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MESSAGE FROM THE PRESIDENT

Happy New Year fellow old radio buffs and nuts! May your year be filled with happy radio hunting and enjoyment. Our club continues to carry on quite nicely, membership hovers around 85 - 90 CRCer's about the same as 15 - 18 years ago.

For those who were able to attend our November meeting – Thanks. For those who were not able to be there – you missed a highly energized, informative and interesting meeting. There were goodies galore in the raffle. We sold around 115 tickets; a record!

Also a sincere thanks for the “show and tellers” for discussing their latest projects. We always learn the tricks of the trade that assist us in our own radio restoration endeavors.

At the January 14th meeting I will present several ideas under the heading of ...”continuous improvement”. Of course the central topic will be our March 25, 2007 show at the Vintage Voltage “Expo”. Please plan to attend. Why stay home and be frustrated by the Broncos anyway? Robert Baumann will have a video presentation on the 2006 AWA convention. There will also be a short technical presentation by yours truly, etc., etc.

Dave

CRC OFFICERS 2006-2007

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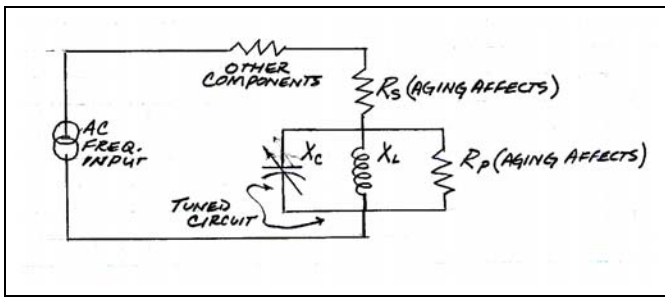
CRC MEMBERSHIP

Annual membership in the CRC runs from **June to June**. Annual dues entitles members to a full year (6 issues) of the club publication “The Flash!”, participation in club events such as the annual April Show, mid-summer picnic, October auction as well as our semi-monthly meetings and swap meets. Dues also entitle you to club officer elections and excellent discount prices on current hobby publications

Current annual dues are \$12. New memberships will be prorated to the following June.

CRC MEETINGS

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



A look at the above shows a tuned circuit but with some resistance's added. R_s is in series and R_p is in parallel and represents aging affects. Remembering that $Q=Z/R$ and that Z is a combination of inductive and capacitive reactance and dc resistance (here again that referenced FLASH article) we can tell that aging affects the impedance (Z) therefore the Q .

Q is the good guy factor, at least most of the time, -- read on! When resistance (R_s) is in series with a reactance such as in this tuned circuit the Q is inversely proportional to the resistance, that is, a increase in resistance produces a lowering of Q . However, when resistance is connected in parallel to the tuned circuit (R_p) the Q will vary directly with the value of this resistance. The Q will be high with a high "shunting" resistance and low with a low shunting resistance. A resistor is sometimes connected across a resonant LC (tuned) circuit to lower its Q producing a broader tuning response curve however, the sensitivity will be reduced.

The insulation between the plates of a capacitor (dielectric) normally is in the hundreds or thousands of megohms. As the old dielectric ages it begins to create little sneaky resistive paths that increase the conduction between the capacitors plates. This is equivalent to adding resistance across the plates (R_p). This will lower the Q of the circuit.

The reduction of Q in the tuning and various antenna, rf, oscillator, and if circuits of a old radio is inevitable. It is our job to be aware of it and do what we can to correct it. Some ideas and methods:

- ◆ Clean the plates, bodies, and trimmer caps on tuning condensers. Reduce those pesky sneaky leakage paths.
- ◆ Check trimmer capacitors for evidence of degenerated or missing mica insulation/dielectric. Clean them up ---carefully.
- ◆ Replace old capacitors with modern ones. Even old molded mica caps can be leaky but infrequently).
- ◆ Shorts between coil turns may not show up by a resistance check but the inductance and Q will

be changed.

- ◆ When repairing or rewinding a coil use the same size wire and spacing as the original. The Q can even be affected by the type of wire insulation e.g. cotton covered vs. enamel. The pronounced affect is changes to the inherent "distributed capacitance" between the coil turns that changes the Q .
- ◆ Resolder all rf solder joints and clean up mechanical connections to remove corrosion and dirt. This is particularly important with ground connections. Old tube socket rivets and ground lugs can drive you batty.
- ◆ Use tuner/contact spray cleaner to clean band switch contacts and wipers. DO NOT get this solvent into trimmer condensers or on coils!
- ◆ Shielded wires should be inspected and replaced if suspicious. Loose tube shields and poorly shielded wires have been known to be the source of annoying and puzzling difficulties in old radios. Poor shielding grounding generates minute eddy currents in the shielding material. These eddy currents rob the shielded circuits of rf electrical energy; essentially adding resistance to the rf circuit.
- ◆ Always make sure tube shields are in place before aligning the radio.
- ◆ In sets where a loop antenna is close to the radio -- like on the back -- placement of this antenna can affect Q and hence, performance.

I'm sure very few of us have a Q meter so I'll bring one to the meeting succeeding the publishing of this article. I'll try to demonstrate its use by measuring various if transformers, both old and new to see if we can tell the differences.

Stay Tuned

Vintage Voltage Expo

classic gear for audio, radio, tv and music

Sunday March 25, 2007

Ramada Plaza

I-25 at 120th, Northglenn CO

10 am - 4 pm

Dozens of Vendors from Around the Country

Selling:

vintage electronics - old school audio gear - tube amps - antique radios - ham radios - transistors - speakers - turntables - vintage LPs - hi-fi - synthesizers - stereos - 8-tracks - electric guitars - amps - vintage TVs - video games - parts - etc!

-- All kinds of cool old electronics and music stuff! --

COLLECTION DISPLAYS, GIANT TESLA COIL & LOTS MORE FUN STUFF!!

The CRC will be playing a major role at the Vintage Voltage Expo. The CRC 2007 Annual Show will be the featured event in the hotel's main atrium. The VVE will be a rare opportunity for us to get exposure to a wide spectrum of collectors and the chance for CRC members to once again sell to a crowd of folks who will be there specifically to buy antiques and collectibles.

Please come to our January meeting with ideas on how we might make our show even better than in years past. We will need lots of folks to display their treasures as well as those who would like to sell some of them. Because we're going to be including special but separate categories of non member judging, we are going to need more volunteers than usual.

The January meeting is the time for us to get ready - be there!

The Colorado Radio Collectors Antique Radio Club

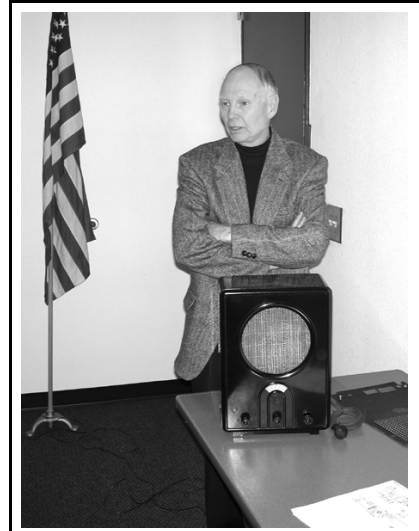
2007 Membership Roster

Last Name	First Name	City	ST	Telephone	Internet Address	Organization
Adams	Don	Longmont	CO	303-776-3180	diadams@svvi.net	
Allen	Trev	Cheyenne	WY	307 514 2349	Lewis.allen@bresnan.net	
Alley	Richard	Ft. Collins	CO		rkalley@comcast.net	
Andrus	Don	Clearwater	FL	720-304-8807	dwandrus@aol.com	
Antique Service	Dave's	Tucson	AZ	520-790-2618		
Armstrong	Thurston	Plava del Rey	CA		pdradioman@aol.com	SCARS
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Baumann	Robert	Lakewood	CO	303-988-2089	rbdenver@aol.com	
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Beckman	Richard	Aurora	CO	303-344-8565		
Bernicky	Norm	Colorado Springs	CO	719-599-3176		
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Burke	Brigid	Denver	CO	303-866-4603		Col Hist Society
Cain	David	Sun City	AZ	623-561-6228	dcaine@uswest.com	
Cain	Dana	Littleton	CO	303-347-8252	Dana.Cain@att.net	
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Illig	Peter	Littleton	CO	303-347-8252		
Jensen	Bob	Alliance	NE	308-762-7391	radionut@bbc.net	
Johnston	Jim	Aurora	CO	303-752-3390		
Jones	Don	Arvada	CO	303-423-1902		
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Kimball	Curtis	Sterling	CO	970-522-2557	ckimball@henge.com	
Kiser	Joe	Centennial	CO	303-680-1589		
Klase	Al	Flemington	NJ	908-782-4829	skywaves@bw.webex.net	Delaware Valley HRC
Koski	John A.	Lafayette	CO	303 666 7135	koski@propollen.com	
Kuberski	Richard	Arvada	CO	303-422-9510	rokuberski@msn.com	
Kuligowski	Mark	Westminster	CO	720-887-6692	matrob@netzero.net	

NOVEMBER '06 MEETING - SHOW N TELL



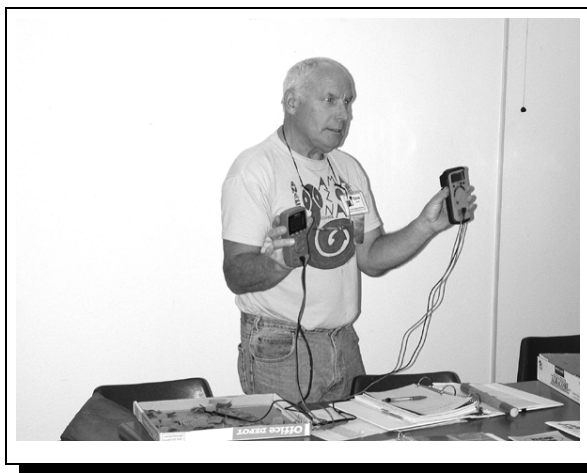
Tom Pouliot explains and demonstrates solid state tube replacements. The devices are wired onto dud tube pins and are completely hidden.



Bill Harris displays his restored mid 30s VE301W German radio. Bill describes how he inserted a small tube, into the glass shell of an original bad tube, to maintain originality.



Bill Dial reviews techniques and products used for polishing bakelite radio cabinets.



Dave Boyle describes very useful meters that can be bought very reasonably from Radioshack.



Bart White shows a kit version of the "Super Wasp" transceiver - circa late 20's.

FOR SALE:

Collector Books for Sale

Special CRC prices. Order at club meetings. Mail order shipments: add \$2.00 postage for each book ordered. Info/order: Charles Brett, 5980 Old Ranch Road, Colorado Springs 80908, (719) 495-8660, brett3729@aol.com. void all other listings

Retail	Club	
RADIOS, (GENUINE PLASTIC) OF THE MID CENTURY Jupp & Pina, hard bound, 219 pgs, 1998 PG, 450+ color pics	\$39.95	\$28.00
ANTIQUE RADIOS, COLLECTOR'S GUIDE - 4th EDITION Bumis, 1997 values, revised & updated, new photos, 248 pgs	\$18.95	\$15.00
GUIDE TO OLD RADIOS, POINTERS... - 2nd EDITION Johnson, 277 pgs, 1995-96 prices	\$19.95	\$15.00
ANTIQUE RADIO RESTORATION GUIDE - 2nd EDITION Johnson, 144 pgs, repairing, refinishing, cleaning	\$14.95	\$12.00
RADIO, EVOLUTION OF THE - VOLUME ONE 227 pgs, 118 in color, More than 800 radios pictured, 1992	\$22.95	\$18.00
RADIO, EVOLUTION OF THE - VOLUME TWO 226 pgs, Radios of the 1920s to 1960s, with 93-94 values	\$24.95	\$19.00
TRANSISTOR RADIOS, COLLECTOR'S GUIDE VOL II Bumis, 1996 prices, Full Color	\$16.95	\$13.00
ZENITH TRANSISTOR RADIOS, 1955-1965 Smith, 1998 PG, 160 pgs, 226 color pics, info, descr.	\$29.95	\$22.00
THE ZENITH TRANS-OCEANIC (THE ROYALTY OF RADIOS) Bryant and Cones, 160 pgs, 1995	\$29.95	\$22.00
ZENITH RADIOS THE EARLY YEARS 1919-1936, Cones 1997-98 Price Guide, 223 pgs, 100's Photos, Desc., Hfst.	\$29.95	\$22.00
RADIOS BY HALLCRAFTERS, revised 2nd edition Dachs, 1999 values, 220 pgs, 1000+ pics, id's, history	\$29.95	\$22.00
CLASSIC TV'S, PRE-WAR THRU 1950'S 86 pgs, color & b/w pics, descriptions, etc.	\$18.95	\$15.00
Machine Age to Jet Age, Radiomania's Table Radio Guide 'III, 33-62 Stein, 256 pgs, 100's of b/w photos	\$29.95	\$24.50
TRANSISTOR RADIOS, 1954 TO 1969 Norman Smith, with prices, 160 pgs, 1000 photos, 1998	\$29.95	\$22.00
PHILCO RADIO: 1928 - 1942 Ramires & Prossie, 160 pgs, 828 pics & drawings, 1993	\$29.95	\$22.00
RADIO AND TV PREMIUMS Jim Harmon, 256 pgs, 200+ photos, 1997	\$24.95	\$19.00
RADIO MANUFACTURES OF THE 1920'S VOL I Alan Douglas, 225 pgs, 1988	\$24.95	\$19.00
RADIO MANUFACTURES OF THE 1920'S VOL II Alan Douglas, 266 pgs, 1989	\$29.95	\$22.00
RADIO MANUFACTURES OF THE 1920'S VOL III Alan Douglas, 285 pgs, 1991	\$29.95	\$22.00
CRYSTAL CLEAR VOL I Maurice Sievers, 282 Pgs, 1991	\$29.95	\$22.00

CRYSTAL CLEAR VOL 2 Maurice Sievers, 252 Pgs, 1995	\$29.95	\$22.00	THE FABULOUS VICTROLA "45" Phil Yourtsis, 176 Pgs, 2002	\$29.95	\$22.00
RADIO TUBES AND BOXES OF THE 1920'S George A Fathauer, 112 Pgs, 1999	\$26.95	\$20.00	ZENITH RADIOS THE GLORY YEARS 1936 - 1945 Cones, Bryant & Blankinship, 256 Pgs, 2003	\$34.95	\$25.50
70 YEARS OF TUBES AND VALVES, 2ND EDITION John Stokes, 264 Pgs, 1997	\$29.95	\$22.00	ZENITH ILLUSTRATED CATALOG AND DATABASE 1936 - 1945 Cones, Bryant & Blankinship, 182 Pgs, 2003	\$29.95	\$22.00
RADIO DIAGRAM SOURCEBOOK Richard Gray, 264 Pgs, 1996	\$18.95	\$15.00	THE ALL-AMERICAN FIVE RADIO Richard McWhorter, 92 Pgs, 2003	\$19.50	\$15.00
THE RADIO COLLECTOR'S DIRECTORY AND PRICE GUIDE, 2ND ED. Robert Grindler, 524 Pgs, 1995	\$26.95	\$21.00	E.H. SCOTT...THE DEAN OF DX, 2ND EDITION Marvin Hobbs, 240 Pgs, 2003	\$29.95	\$27.50
COLLECTOR'S GUIDE TO VINTAGE TELEVISION Durbal & Glenn Bubenheimer, 200 Pgs, 1999	\$15.95	\$13.00	ANTIQUE RADIOS 6TH EDITION John Slusser, 320 Pgs, 2004	\$24.95	\$19.50
NOVELTY RADIOS, VOLUME 1 Marty Bumis & Robert Breed, 223 Pgs, 1995	\$18.95	\$15.00	OLD TIME RADIOS Joseph Carr, 256 Pgs, 1991	\$19.95	\$15.00
NOVELTY RADIOS, VOLUME 2 Mary Bumis & Robert Breed, 199 Pgs, 1999	\$19.95	\$15.00			
COMPLETE PRICE GUIDE TO ANTIQUE RADIOS: PRE-WAR CONSOLES Mark Stein, 235 pgs, 100's of b/w photos	\$29.95	\$22.00			
TUBE TESTERS AND CLASSIC ELECTRONIC TEST GEAR Alan Douglas, 166 Pgs, 2000	\$25.95	\$19.50			
COLLECTOR'S VACUUM TUBE HANDBOOK, VOLUME I Robert T. Millard, 196 Pgs, 2001	\$25.95	\$19.50			
SILVERTONE ANTIQUE RADIOS 1930 - 1942 Stein, 239 pgs, 2001	\$34.95	\$25.50			
ANTIQUE RADIOS COLLECTOR'S GUIDE 5th EDITION John Slusser, 264 Pgs, 2001	\$19.95	\$15.00			
RADIOCRAFT JUBILEE - REPRINT OF 1938 EDITION Hugo Gernsback, Vestal Press	-----	\$12.00			
CLASSIC CONE SPEAKERS Buford & Jane Chidester, 122 Pgs, 2001	\$25.95	\$19.50			
TUBE LORE Ludwell Silbey, 186P gs, 1996	\$29.00	\$15.00			
ARTHUR COLLINS RRADIO WIZARD Ben Sterns, 394 Pgs, 2002	\$18.95	\$14.00			
MACHINE AGE TO JET AGE - VOL I Mark V. Stein, 256 Pgs, 1998	\$24.95	\$21.00			
MACHINE AGE TO JET AGE - VOL II Mark V. Stein 358 Pgs, 1997	\$28.95	\$23.00			
TABLETOP RADIOS - Vol I Mark V. Stein, 240 Pgs, 2002	\$29.95	\$22.00			
A. ATWATER KENT Williams & Wolkowitz, 108 Pgs, 2003	\$25.95	\$19.50			
THE WOOD FINISHER Bruce Johnson, 341 Pgs, 1993	\$12.00	\$10.00			
THE WEEKEND REFINISHER Bruce Johnson, 296 Pgs, 1989	\$12.00	\$10.00			
THE PLATING MAN'S MANUAL Johnson	---	\$10.00			

The Open Trunk

Member submitted advertisements



Excellent Restored and Recalibrated Test Gear

Heathkits;

- ✓ 5" Oscilloscope O-12 \$50
- ✓ Rf Signal Generator SG-8 \$30
- ✓ Q multiplier QF-1 \$15
- ✓ TV alignment generator IG-52 \$70

Additional equipment ;

- ✓ Eico Signal generator 324 \$45
- ✓ Sylvania Tube tester 620, mutual conductance, professional model \$85
- ✓ RCA Audio generator WA-44A \$40
- ✓ BK Picture tube tester and rejuvenator \$18

Dave Boyle, (303) 681-3258

djboylesr@msn.com

01/07

FOR SALE: Stromberg-Carlson model 744-B 1927. A rare combination for it's day of a radio and *electric* phonograph. This is an AC powered set with all 01A's. \$250.00

Merrill Campbell (719) 596-3482



campbell321@juno.com

09/06

FOR SALE: 1928 AK-52 7 tube metal console, asking \$150 - trades considered.

WANTED: Morse keys/bugs/paddles, Allied Radio/Knight Kits, "heavy metal" communications gear (Collins, National, Hallicrafters, Hammarlund). Also Icom CR-64 High-Stability Crystal Unit for R-71A receiver.

Robert Baumann, (303) 988-2089

rgbdenver@aol.com

10/06

FOR SALE: 1941 RCA Radio Victrola,

Anniversary Model V-205.

Larry Beckman, (970) 482-2537

Fort Collins

06/06

WANTED: I'm looking for any info about Dr. Lee DeForest and his activities in Colorado and Montana in early 1900s. I'm also looking for a copy of an advertisement for the 2-transistor "Boy's Radio" from 1959-1960 publications.

Wayne Gilbert, (303) 431-6774

wagil@aol.com

06/06

FOR SALE: Atwater Kent Model 20C, in GOOD original condition. The set works, and comes with 5 globe tubes, and a Sterling "B" Eliminator, NO speaker. Asking \$225. If interested, contact

Barney Wooters, (303) 770-5314

10/06

FOR SALE: Old "Supreme Radio Analyzer" Model 339 Deluxe - works but instructions lost, \$15 OBO. Also Weston Model 976 Electronic Multimeter with comprehensive inst. manual - may need some repairs, \$15 OBO. Also many old used and NOS tubes, meters, Bakelite molded capacitors, Porcelainized resistors, etc. - real cheap!

Ken Motzer, Longmont (303) 684-8147

kenlea1@juno.com

12/06

*For our January 14th, 1:00pm meeting
We will be meeting at the Castle Rock Public Library Building*

**From I-25, take the Plum Creek Pkwy exit
Turn East onto Plum Creek Pkwy
Turn LEFT/North onto S. Wilcox St.
Go to the CR Public Library building at 100 S. Wilcox St.
The meeting is at the back of the lot, past the Dairy Queen.**



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

FIRST CLASS MAIL