

**BULLETIN**  
*Indiana Historical Radio Society*  
PRESERVATION FOR POSTERITY

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No 2

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Elkhart Meet August, 2001



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(revised 9/4/01)

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IHRS Museum Curator

**Bulletin Deadlines:** News, Articles & Radio Ads, 2/15, 5/15, 8/15, 11/15

**IHRS e-mail Web site address:** [www.indianahistoricalradio.org](http://www.indianahistoricalradio.org)

The INDIANA HISTORICAL RADIO SOCIETY is a non-profit organization founded in 1971. Annual membership dues are \$15.00/year or 2 years/\$25.00, which includes the quarterly IHRS "BULLETIN". Radio-Ads are free to all members. Please include a S.A.S.E. when requesting information. Send applicatins for membership and renewals to Fred Prohl, our treasurer as noted above.

## IHRS ACTIVITIES for 2001. our 30<sup>th</sup> YEAR

### SEPT 15 SPECIAL "OPERATING RADIO" MEET.

**NOBLESVILLE, IN., Forest Park Pavilion.** Indoors except for flea market. **Operating Radio Contest categories:** 1) Non-superhets and 2) Superhets. **Non-operating contest:** Your favorite radio. **Nearest motel: Super-8, 317-776-7088 or 1-800-800-8000** (about 15 mins away on SE side of town off HWY 37).

**A special brochure will be included in a Bulletin mailing which will include a map and all other pertinent information.** For other info contact Mike Feldt, 317- 844-0635, [feldtmc@iquest.net](mailto:feldtmc@iquest.net).

### OCT 13 FALL FOLIAGE MEET in beautiful Riley Park,

**GREENFIELD, IN. 7:30 to ???.** Located on Apple St. about 1 block N. of US-40 and 2 miles E. of SR-9 (State St.). Coffee and doughnuts for early arrivals. **7:30:** Registration \$5.00 per member / family. Flea market open only to all registrants. **10:00: Contest starts. Categories are:** 1) Reflex radios and 2) Tombstones. Popular vote counted at 11:45. **12:00: Carry-in lunch.** Bring a dish or a desert to pass if you can. **1:00 PM:** Short business meeting, contest awards announced and election of officers from 1:00 to 2:00. Please attend this important meeting. **Motels:** (All located South of I-70 at SR-9, Exit 104) **Lee's Inn, 2270 N. State St., 317-462-7112 or 1-800-733-5337. Super-8, 2100 N. State St., 317-462-8899 or 1-800-800-8000. Comfort Inn, 178 Martindale Dr., 317-467-9999 or 1-800-228-5150. Holiday Inn Express, 2070 N. State St., 317-467-0999. Dollar Inn, 2180 N. State St., 317-457-0067.** Info: Glenn Fitch, 765-565-6911, [glenn.fitch@cnz.com](mailto:glenn.fitch@cnz.com), or Herman Gross 765-459-8308, [w9itt@mindspring.com](mailto:w9itt@mindspring.com).

### PRELIMINARY INFO: IHRS WINTER 2002 MEET

#### FEB 16, 2002 WINTER MEET INDIANAPOLIS

at **Holiday Inn South East, 5120 Victory Drive, 1-465 at Emerson Road, Exit #52. 317-783-7751** 25 rooms set aside, cost \$74.00.

This is the same location for many years. All activities inside. Set up after 6 PM on Friday, Feb 15<sup>th</sup>. Doors open Saturday at 6 AM. More complete info in subsequent Bulletins and in the Winter 2000 Bulletin. Info: Herman Gross, 765-459-8308, email: [w9itt@mindspring.com](mailto:w9itt@mindspring.com).

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## **MSARC ACTIVITES -2001**

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**SEPT 29, FALL MEET**, Central Kentucky Vocational / Technical School, Lexington, KY. Info: Joe Vittio, 502-839-5444. Also info via Joe Zahnen, 423-690-5833, [joezah@esper.com](mailto:joezah@esper.com)

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## **NARC ACTIVITIES -2001**

For NARC meet info contact: Jim Thompson, 612-822-4000 or [Kip Wallace](mailto:KipWallace@dl-inc.com), 612-544-2547, [KipWallace@dl-inc.com](mailto:KipWallace@dl-inc.com)

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## **ARCI ACTIVITIES - 2001**

All meets at Elgin, IL, RAMADA INN, 345 River Rd. 847-695-5000. **AUG 1-3, RADIOFEST XX. OCT 14 & DEC 16**, Swap meets. Info: Tom Klienschmidt 847-255-8128 or Art Bilski 630-739-1060, [OLDRADIO@NTSOURCE.COM](mailto:OLDRADIO@NTSOURCE.COM)

## **Message from the President**

**Herman Gross**

THE FINAL CONTRACTED DATE FOR THE 2002 SPRING MEET IS FRIDAY AND SATURDAY MAY 10 & 11, WITH SETUP PERMITTED ON THURSDAY EVENING, MAY 9, IF WE WISH.

Here's how it came about. I was on the East side of Indy today and decided to run out to Greenfield to check on Motel rates and catering services available in the area. The Century 21 people gave me several good catering leads. Caterers will need a couple months advance notice. Kentucky Fried Chicken will need at least a week. They are sending me an updated catering menu. They do not deliver. Ponderosa's banquet room is no longer available on weekends. While there I visited the fairgrounds manager. I expressed some concern about our Memorial weekend date and told him I'd prefer something in early May if possible. I said the 10th and 11th would be nice. He had a name assigned to May

11, but said the guy, who holds auctions there frequently, also has a later date in May scheduled and that he hadn't told the guy he could have the May 11 date. He asked, "do you really want the 10th and 11th?" I said "yes" and that we were "trying to find a home" and would want the date in subsequent years. He erased the guys name and inserted "radio club" in the May 10 and 11 slot. I signed the contract and gave him a small down payment. Done deal. I feel good about this but my apologies to Glenn for undoing what he'd tentatively set up for May 30 / June 1.

By the way, motels in Greenfield definitely do raise their rates for motor sport and other events. Super-8 doubles, up to \$95.00 for a single bed and \$119.00 for two beds. The Holiday Inn Express next door goes up from about \$85.00 to \$125.00 - \$175.00 with a two day minimum and must be paid up about 5-6 days in advance. Same deal in Kokomo 60 miles away. The Holiday Inn manager gave me a copy listing 35 events in the greater Indy area they monitor this year.

Obviously I invoked "executive privilege" in this case but I did have some member input suggesting an early May date.....sort of where we started a long time ago. Unless I'm impeached, this is the way it is. I know many will be happy with the early May time frame. Can we hope that this will increase participation being the first big event in the Spring? Truly, it will be in Spring. The June date was impinging on "Summer". Happily, the fairgrounds is quite weather proof. If people can drive through ice and snow to get to the Winter meet, a bit of rain or threat of rain shouldn't be a deterrent.

How the two days are used will be up to the new management team. Remember, we wanted to have a big selling day on Saturday for a change. This year we had about 25 register on Saturday to find a pretty poor flea market. A non-member friend of mine from Kokomo came down Sat and turned around and went home, disgusted.

I will inform ARC magazine about the Feb 16, 2002 Winter Meet and May 10 & 11, 2002 Spring Meet dates for free publicity.

Herman Gross, President, IHRS

## Comments from the Editor

Ed Dupart

I Thank Bob O'Friel for the fine job he has done over the years in preparing the Bulletin for all of us. I'm sure he will be enjoying his extra time in restoring some of his long awaited projects and I will be anxious to see some of his restorations at our future meets.

Some of you are aware that Herman Gross had heart problems and couldn't attend the Elkhart meet. We miss you! All of us wish you a speedy recovery!

Enclosed are some fine articles that represent a lot of hard work.

As a reminder, I am the interim editor for this Bulletin and should I become the editor after the October elections I will welcome all suggestions for improving upon an already great publication. Should I become the permanent editor, then feel free to use e-mail for sending articles and information to me. If you want to send me articles on a 3 ½ or 5 ¼ floppy, that's great, too. I can work with virtually any word-processing program for DOS or windows designed for IBM compatibles. Sorry, I'm not set up for Mac or Apple. Typewritten articles are fine, too, because I can scan those into my computer. I will be looking for pictures of unusual radios from inexpensive to expensive radios that you normally don't see at shows for a picture gallery in the Bulletin, plus your favorite photos.

If I make a mistake, please forgive me, but please let me know so I can correct it.

Ed Dupart

### Photo Gallery



This Lafayette KT-200 belongs to George Hauske. I see lots of Hallicrafters, Knightkits, etc., but not to many Lafayettes at meets. Ed Dupart - editor

# CLUB SPOTLIGHT

## The Indiana Historical Radio Society 30th Anniversary Year

The Indiana Historical Radio Society (IHRS) is a group of individuals who "preserve for posterity" all types of memorabilia of the radio industry. Established 30 years ago in October 1971, the IHRS has grown from its original 13 collectors to an international organization of about 300.

Most members avidly collect and restore antique radios, speakers, vacuum tubes and related equipment. Other members' interests lie in radio advertising, magazines, old time radio shows on tape, headphones, loop antennas — the list goes on. A good many of the members have come up through the ranks of Amateur radio, and they restore and build receivers and transmitters from the 1920s and 1930s and put them "on the air."

### THE IHRS BULLETIN

The Society publishes the IHRS *Bulletin* quarterly. This illustrated publication includes articles on radio repair and restoration, radio pioneers and manufacturers, as well as an occasional account of a member's fortuitous acquisition of a rare radio or the story of how he got started in radio. "Radioads" are printed free for members.

Photos of "Old Equipment" contest winning entries and general interest photos of members are frequently included. The *Bulletin* seeks original articles on all aspects of the radio collecting spectrum.

### THE IHRS MUSEUM

The IHRS maintains a very extensive and popular museum in Ligonier, Indiana. Known as the Indiana Historic Radio Museum, it is the only museum dedicated exclusively to the pioneer years of radio and associated technology in Indiana. On display are hundreds of radios, horn speakers, vacuum tubes, advertising signs and much more.



### Indiana Historical Radio Society (IHRS)

Publication: Indiana Historical Radio Society *Bulletin*, published quarterly  
Officers:

President: Herman W. Gross  
Vice President: George Freeman  
Secretary/Treasurer: Fred Prohl  
Historian: Dr. Ed Taylor  
Museum Curator: Fred Schultz  
Editor: Robert M. O'Friel

Dues: \$15 for one year or \$25 for 2 years for the whole family at the same address

### Membership Information:

Send SASE to Fred Prohl, 3129 Lanam Ridge Road, Nashville, IN 47448; or  
Printable membership form at the IHRS web site [www.indianahistoricalradio.org](http://www.indianahistoricalradio.org)

Annually, thousands of people from every state and several foreign countries step back into the "Golden Age of Radio" for an entertaining and educational hands-on experience at our museum. Visitors are given the opportunity to try to tune an old 3-dial battery radio. We invite you to see part of our collection and find other information via a link to the museum from the IHRS Web site listed in the box above left or call the museum curator at 1-219-894-3779.

### ACTIVITIES

The IHRS holds four meets a year in various areas in Indiana. There is a swap and shop at every meet. At others, there may be an old equipment contest, auction of radios and parts, seminars and speakers, a "carry-in lunch" or an annual awards banquet. There are at least two brief business meetings associated with the meets.

The IHRS welcomes radio historians and collectors to its fold. Please contact our secretary/treasurer or our Web site for more information. Addresses are in the box above.

Plan to stop by the August 25 Summer Meet in Elkhart, Indiana to congratulate the IHRS on their 30th Anniversary.

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## Articles

### THE FACTORY "F" RADIO

By Bill Arnold  
Washington, Indiana

As an antique, the radio is relatively new since it has only been commercially produced since the mid 20s. Before that time, one could mail order parts and build your own. This was termed a "Breadboard" or "Homebrew". These were battery operated and were crude by modern standards. They had two or three dials and used earphones rather than a speaker in the cabinet. It wasn't until later on that the speaker was actually built into the cabinet itself.

By 1925, there seemed to be several radios produced many of which were only made a year or so. Some were only made in small quantities and perhaps in a spare room or basement. Everyone seemed to be fascinated with the new fangled gadget and as the popularity grew, more and more radios were made to satisfy public demand.

In the 30s there emerged a number of radios manufactured in Chicago, Illinois under various names. They were mass produced and made to be sold inexpensively. After all, the economy wasn't good and there was big demand for a product that could be purchased relatively cheap. The radio was still considered a luxury that many working folks could not afford.

Mail order companies such as Sears & Roebuck, Montgomery Ward, Spiegel, and Aldens to name a few were marketing radios under their own brand names which were sometimes all made in the same plant with various other radios. To the consumer, it made no difference what it was called as long as it was cheap and it worked. After all, no one really knew much about why and how the radio operated. It was just a bunch of parts and you couldn't see any of the workings of it as in a mechanical devise.

In my search for old radios, I have seen various brands over the years that I can now attribute to certain plants in Chicago, Illinois. I have seen various ones with either a silver tag on the chassis or an orange tag installed. The orange tagged radios were made in a location designated as factory "A" while the silver tag meant that it was made in factory "F".

I don't know exactly how long these plants were in operation but there seems to be evidence that there were a great number of radios manufactured with a number of different names. It would be impossible to say with any certainty just how many different brands emerged as a result.

There also doesn't seem to be much information on these types of radios. The Ryders manuals do not list some of them because they were unknown brands. I had such a radio a few years ago and never did know what the brand name was. Many times the only identification was a decal on the

cabinet front which is usually gone over the years. The dial was distinctive and closely matched the Clinton radios of the same era.

You can date the radios by the tube lineup within a few years. Of course, you have to keep in mind, they were sometimes produced with obsolete tubes or parts because they could be bought in quantities and at a reasonable price. A radio made in the late 30s could have earlier tubes used because of this. The one thing for sure was the fact that you knew that a radio was not made before such a certain date because certain tubes or parts were not made at that time. (Phillips screws weren't used

until after World War II)

You have to be familiar with the construction of various radios to date them with any accuracy. The components, tubes and construction are all part of that. The style of cabinet also is a giveaway. The age can usually be determined within a few years by this method.

It is also really not known if the rarity of these obscure brands adds to the value or not. After all, there is no documentation and many times it is guess work to even replace components. When you can't see the value of the component you have to guess at what would have been used. If you are working on a name brand at least you have a schematic drawing to go by. Sometimes you have to dig through a lot of drawings to find one that matches the radio and do the best you can. Many times you can't really get the radio to operate the way you think it should but it may not have been all that great when it was new.

They all seem to have just about the same tube lineup and circuit design and if you are familiar with one, you can usually get the others going. Most are simple and can be fixed to operate as good as new whatever that might have been. You have to remember that they may have not been all that great when they were new and they haven't improved with age.

My experience indicates that most of these cheaper radios seem to perform reasonably well but not as good as the top of the line name brands that were around at the time. This is not to say that they aren't interesting. Some of them have a unique cabinet and are highly collectable because of the design. After all, if a radio is ugly, no one wants it. The catlin radios have brought some pretty good prices even though there is nothing special but the case.

There are no guidelines for estimating the value other than what the buyer wants to give. If you have never seen a particular brand, how do you know what that would be? If you can't find a schematic and it doesn't work, I wouldn't think the value would be much. It is just guess work. It can be compared to a radio of known value that looks similar. Just because it is rare, doesn't necessarily mean it is desirable and valuable. Still, it is fun to collect these radios and they are unusual enough that none of your radio collector friends have one just like it. That is a good enough reason to salvage that factory "F" radio.

## “EV-RA-LAB”, Evansville, IN; A Collaboration

by George A. Freeman

(Editor's Note: The following article refers to figures and pictures, which I did not get in time for this issue of the Bulletin, but will be in the next Bulletin. This article, I thought was so informative, that I felt I could still include it in this issue without the pictures.)

This is a story of collaboration. (to cooperate, to work together toward a common end).

Collaboration between a 19th century born father and his 16 year old twentieth century son.

Collaboration in the 21st century between three Hoosiers, a Buckeye, and a Kentuckian; members of two different regional vintage radio clubs.

The early 1920's Collaboration:

W. E. “Jack” Martin was a telegraph operator, and dispatcher at L&N Railroad from 1889 until he retired in 1938, a period of 49 years. He was 53 years old in 1921 when his 16 year old son, George F. Martin, must have been completely immersed in the new “thing”, radio! Jack spent a great deal of quality time with the boy, learning of the potential of this toy for something more important than play. Perhaps Jack had heard of Marconi experiments employing radio waves as communication devices for trains. Perhaps the father envisioned wireless having potential for elimination of his own job. The son was able to communicate his enthusiasm and a degree of what seemed sophisticated knowledge of the new medium to his dad. The father opened his mind to the boy's obsession. Mutual enthusiasm of the father and the son lead to a business venture, “EV-RA-LAB”, shortened version of “Evansville Radio Laboratories” named for the town to which they had just moved, Evansville, Indiana. So committed was the father to the venture that he risked serious portions of his telegrapher's paychecks to the early manufacturing and marketing of radio sets and components.

Note, in Figure #1, EV-RA-LAB makes or markets the filament control. The complete unit including cabinet costs \$12.00. In Figure #2 two months later, the Rheostat is made by Paragon and the cabinet is priced an additional \$3.00, a 25% price increase! A first blush of optimism is implied in the appeal to dealers and the added production that could result. And, note the addition of an amplifier unit A-2, priced at three times the Type “D”. By March the only component made or marketed exclusively by EV-RA-LAB is the switch arm, not as difficult a process as the filament control.

Did the collaboration bear fruit? Young George did not find a job in radio manufacturing. But he did work all his life in the printing business. We venture this possibility. The same ads you see may well have become part of a dossier the boy used to secure his job in the printing business. Was the banner headline, WATTS THE YOOSE” young George's idea? Copy in a January, 1921 QST ad claims, “The EV-RA-LAB Type ‘D’ is a neat and highly efficient instrument

with its price within the range of all. Has a seven point switch for varying the high voltage battery. This is absolutely necessary when soft or receiving tubes are used. This detector may be used with any type of tube on the market.” Were some of these the boy’s words? It’s reasonable to assume that some of the ad layouts manifested George’s thought processes, that his prospective employer was impressed, and the boy won his job in what we know turned out to be a lifetime career. The father/son collaboration provided abundant fruit.

### The 21st century Collaboration:

The author, during the 1990s, came across a coverless March, 1921 Radio News at a vintage radio meet and bought it for perhaps \$3.00. Inside was the ad beginning “WATT’S THE YOOSE..” (Figure #2) Earlier, Indiana Historical Radio Society (IHRS) co-founder, Jim Fred of Cutler, IN, well known vintage radio writer and entrepreneur as “Antique Radio Laboratories” paid a Californian an above-average price for a coverless 1921 QST. The reason Jim overpaid was because of a long letter he received sometime between 1970 and 1980. The writer told Jim about his boyhood days as a 16-year-old radio manufacturer. The correspondent revealed EV-RA-LAB bought ads in QST magazine in 1921. The man, whom Jim and the author are now assuming was George F. Martin, did not go into radio, but instead “went to work for a printing company”. Jim may have lost the letter but he recalls clearly many salient facts which he relayed to the writer in a note dated June 27, 2000. Jim was responding to an ad placed by the writer in the June “Antique Radio Classified” for an EV-RA-LAB artifact. Jim has one. It was sent to him by George Martin. It’s a rubber stamp for EV-RA-LAB.

As soon as last year’s Mid South Antique Radio Collectors (MSARC) meet was over at Henderson, KY last year, the writer drove across the river to Evansville and spent two days at the city’s two libraries researching EV-RA-LAB. We found the address listed for the firm, (a) learned that many city street names, and addresses had been altered in 1929, and photographed the old home sites with the new street names. We did not find any reference to EV-RA-LAB even being in existence. Could it be that Jack’s enterprise would be construed as moonlighting by the railroad? Ergo an employee serving two masters. If so, publicity would be avoided to protect the income funding this speculative radio enterprise.

We did find Jack’s obituary in the Evansville Courier dated March 23, 1952. He died at the age of 84. His wife of 53 years, Cora, died three months later. Survivors included a daughter, Mrs. W.A. Herron and a son, George F. Martin. And, among the notes of the author, the fact that George lived most of his life at Newburgh, IN (near Evansville), and “worked for a printer”.

The writer visited the Evansville address in the 1923 QST and Radio News EV-RA-LAB ads, 1103 South Third St. The building is no longer in existence. Judging by adjacent and nearby properties the home of EV-RA-LAB probably was in the basement of a small private residence between Blackford and

Washington Avenue. The post 1929 address would have been 955 Southeast Third St. This space is occupied today by one end of the Stratford Apartments which face Washington Avenue.

In 1925 the Martins moved to 21 Oa Mulberry Street. (b) They moved again in 1926 to 2426 Riverside Avenue, corner of Linwood Avenue where Jack and Cora lived out the rest of their lives.(c) (Figure #3)

Jack Martin was a member of the E.T. Turner Masonic Lodge at Earlington, KY for 50 years and was a member of the Knights Templar Commandery at Madisonville, KY. Learning this the author called on fellow Madisonville, KY MSARC member Wally Watts for help. We needed a picture of the low-profile entrepreneur!

Wally was in the shower weeks later when the lightbulb lit. He remembered he had saved a reprint of a Dec. 3,1903 "Special Coal and Railroad Number", a magazine section of the "Eartington Bee" newspaper. Earlington had been a leading coal and rail center. Wally found the paper, and Bingo!, learned that Jack Martin had been transferred from Evansville by L&N RR to Earlington in 1900. Then was transferred back to Evansville in the 1920 to 21 period. Thus EV-RA-LAB may have sported a Kentucky name but for a job switch and a few months. And, for our article, Wally found the accompanying picture of Jack sporting his bowler and handlebar mustache. (Figure #4)

Our thanks to Bob Sands, IHRS member/MSARC officer, who patiently explained to the writer the EV-RA-LAB components and their function and manufacturing complexity.

The collaboration continues. MSARC vice president, Jim Church has attempted several contacts to family members, all so far to no avail. You get few "bingos" among the many tries in research. Each blind alley can help eliminate possibilities.

And that brings us to you. George Martin told Jim Fred he donated the only EV-RA-LAB radio he owned to a museum. Next time you visit a museum keep your eyes open. The folks at the museum may not know they have it let alone that it's a radio artifact. So gaze at the pictures, burn them into your brain, and join the collaboration as we search for a real EV-RA-LAB. Flea markets, meets, antique and collectible stores, you know the drill. Thanks in advance to you, and to Wally Watts, Jim Fred, Bob Sands, and Jim Church for their efforts.

(a) 1920 Evansville City Directory.

(b) 1926 Evansville City Directory.

(c) (In 1929 this address was re-assigned the designation 738 East Riverside Drive.) 1929 Bennett's Evansville City Directory. ©  
RALOGEUM 2001

## Letters

Dear Ed Dupart

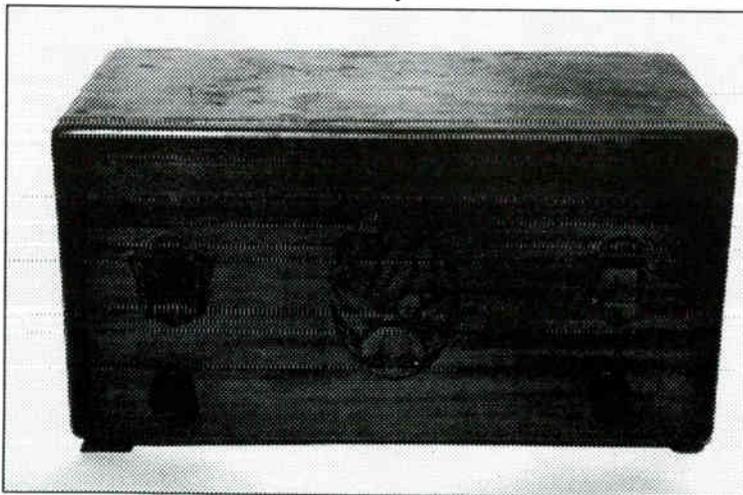
Enclosed is a poor picture of my Radiola 21. It appears nice on the outside, but gives me a dilemma as to restore it or keep it original. Could we see how club members feel about this problem as listed below. (Radiola 21 is pictured on pg. 50 of Alan Douglas's Book 3 and the chassis is similar to Radiola 44 as shown on page 53.)

It seems that this set is RCA's first screen grid battery set with lots of shielding. This set's chassis is unusual because it has a steel bottom plate with an open upper section of compartments bolted to the bottom plates. The big problem is that this is pot metal that has distorted so much that the variable condenser stator plates bolted to it have been moved so far as to rub the rotor plates. Rotor shaft bearings are also not working freely and the dial cannot be turned.

Should this be left in this condition for future collectors to ponder or would it be worthwhile to construct a new sheet metal frame and get this set operating again? A restored frame would be very tough but not an impossible job.

Geo. Hausske  
1922 E. Indiana St.  
Wheaton, IL 60187

OK, fellow club members, please help out George with some suggestions. My personal thought is to wait for a snowy winter day/night/week when you can't go anywhere and you are bored to death and to relieve the boredom, make your plate. That's when I have done some of my best cabinet restorations. The editor.



Radiola 21

**RADIOS with NO SCHEMATICS and  
NO CAPACITOR VALUES  
WHAT DO I USE?**

by Edward Dupart

June, 2001

Most of us at one time or another have run across a radio that needed new capacitors, but we didn't have a schematic and there were no values on the capacitors for one reason or another. Mice, rats, roaches or a Philco. What values do we use? After years of working on old radios, I have found certain values are common to their particular application. What I have listed in the following table are approximations and you may find some exceptions. Also, these are for vacuum tube circuits, not transistor circuits. Transistor circuits use much larger value capacitors because of the lower impedance's encountered with bi-polar transistors. Listed in the table are some of the common values I have found and what I use.

For voltage ratings of non-electrolytic capacitors, 400 to 600 volt capacitors will work fine for transformer operated radios and 150 to 200 volt capacitors will work fine for AC/DC operated radios. The electrolytic filter capacitors in power supplies should be a 450 volt rating for transformer operated radios and at least 150 volts for AC/DC operated radios without voltage doubler circuits, which aren't very common. If you have a voltage doubler circuit, use 350 volt capacitors throughout the circuit. To replace a low voltage electrolytic with a high voltage electrolytic will result in the high voltage electrolytic not being formed properly, but I have done this and haven't had any problems. An example would be replacing a 20 volt electrolytic with a 250 volt electrolytic.

Your AVC and cathode bypass capacitors operate at very low voltages, and so you can use 100volt capacitors safely in those applications. Some of the audio coupling capacitors operate at very low voltages, especially the one connected to the volume control. Use a meter and measure the voltages across the capacitor to be sure.

Capacitors are not as critical in capacity value as what some people might say, EXCEPT in AVC, tuning and other resonant circuits, so you can alter the value of coupling and bypass capacitors to a degree and the radio will still play OK. I find it better to go higher in capacity value rather than lower and the math proves it.

I have done a lot of experimenting and the following are the results of those experiments. Some texts also back up my findings.

You can double and triple the capacity value of power supply filters without any adverse effect, other than when you turn off the radio it may play for a few seconds while the caps are discharging. Tube rectifiers have a slow warm up and will charge the capacitor gently, but in a set using solid state

rectifiers/diodes, there is the risk of destroying the diode due to the initial large surge current and in that set I wouldn't go any more than twice the value of the original capacitor.

To radically increase the value of audio coupling capacitors, say going to a .5 $\mu$ f, might cause a multistage amplifier to oscillate, but if you stay within the values listed in the table you won't have any problems.

Putting in too large an AVC capacitor at the mixer/RF section, say a .1 $\mu$ f, can cause the radio to take a long time to adjust to the proper volume level.

Putting in too large an AVC capacitor at the volume control can cause a loss of audio, because the audio gets filtered to ground rather than going to the 1<sup>st</sup> AF amplifier. The object of the 250pf capacitor is to fill in the RF valleys and make a smoother AF signal.

Now for some math. The following formulas will give you a good ball park figure.

$$X_c = \frac{1}{2\pi fC} \quad \text{from this we can find } C = \frac{1}{2\pi fX_c}$$

Remember these?

f = the lowest frequency you want to amplify.

We are going to use these formulas for finding the value of coupling capacitors and cathode bypass capacitors.  $X_c$  will need to be 1/10 of the grid resistor or cathode resistor. If you look at radio schematics from Rider manuals and Sams Photofax, you will find the second audio amplifier generally uses a .01 $\mu$ f and a 470K to 500K $\Omega$  resistor with some radios going as high as 2.2meg $\Omega$ . Lets work out the problem using a .01 $\mu$ f capacitor and a 500K $\Omega$  resistor.

$X_c = 1/10$  of 500,000 $\Omega = 50K\Omega$   $f = 200$  cps (OK, Hz) considering a 4" speaker is being used.

$$C = \frac{1}{2\pi fX_c} = \frac{1}{6.28 \times 200 \times 50 \times 10^3} = \frac{1}{62.8 \times 10^6} = .015\mu\text{f}$$

You can replace the 1 with 1,000,000 and the answer will come out in  $\mu$ f.

I noticed a number of battery operated radios that used a 2.2meg $\Omega$  resistor and a coupling capacitor from .005 $\mu$ f to .01 $\mu$ f. Lets see what value we get with that resistor.

$$C = \frac{1}{2\pi fX_c} = \frac{1}{6.28 \times 200 \times 2.2 \times 10^5} = \frac{1}{2.76 \times 10^8} = .0036\mu\text{f}$$

Lets try it with a 1meg $\Omega$  resistor. Remember  $X_c$  is 1/10 of the 1meg $\Omega$  resistor.

$$C = \frac{1}{2\pi fX_c} = \frac{1}{6.28 \times 200 \times 1 \times 10^5} = \frac{1}{125.6 \times 10^6} = .007\mu\text{f}$$

Using 50Hz, typical of HiFi and stereo amplifiers, and a 1meg $\Omega$  resistor the value of C will increase. Lets try it:

$$C = \frac{1}{2\pi f X_c} = \frac{1}{6.28 \times 50 \times 1 \times 10^6} = \frac{1}{31.4 \times 10^6} = .031\mu\text{f}$$

Now, lets try a couple of problems with cathode bypass capacitors. In audio output circuits the value will be large and generally use electrolytic capacitors and in RF and IF circuits the value will much smaller. The object of the cathode bypass capacitor is to increase the gain of the amplifier. We will work a problem out using a 50C5 and a 150 $\Omega$  cathode resistor. Xc will need to be 1/10 of the cathode resistor.

$$C = \frac{1}{2\pi f X_c} = \frac{1}{6.28 \times 200 \times 15} = \frac{1}{18,840} = .000,0531\text{f or } 53\mu\text{f}$$

Now, we will work a problem out using a 12BA6 as an IF amplifier at 455KHz and a 100 $\Omega$  cathode resistor. I chose 400KHz for the lowest frequency.

$$C = \frac{1}{2\pi f X_c} = \frac{1}{6.28 \times 400 \times 10^5 \times 10} = \frac{1}{2.512 \times 10^9} = .04\mu\text{f}$$

Most of the calculated values are not available commercially so you will need to go to the next higher commercially available value when obtaining a capacitor. As an example, you can't walk into a Radio Shack and buy a .007 $\mu\text{f}$  capacitor so go with the next higher value, a .01 $\mu\text{f}$  capacitor.

Hopefully, you now have an idea what value capacitor to use and an idea how some of the values are obtained. I can generally recap a radio with the following values on hand: .001 $\mu\text{f}$ , .002 $\mu\text{f}$ , .005 $\mu\text{f}$  (.0047 $\mu\text{f}$ ), .01 $\mu\text{f}$ , .05 $\mu\text{f}$  (.047 $\mu\text{f}$ ), .1 $\mu\text{f}$ , .22 $\mu\text{f}$ , all @ 600v, and for the power supplies: 50 $\mu\text{f}$  (47 $\mu\text{f}$ ) @ 150v and 10 $\mu\text{f}$  & 20 $\mu\text{f}$  @ 450v.

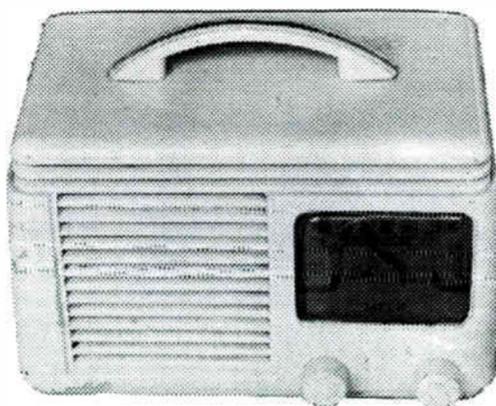
References:

Electronics Communication, 4<sup>th</sup> edition, Shrader, McGraw Hill Book Co., Pgs 288-289

Commercial Radio Operator Theory Course, Schwartz, Martin, AMECO Publishing Corp., Pg 160

<b>CAPACITOR APPLICATIONS OTHER THAN POWER SUPPLIES:</b>		
<u>Application</u>	<u>Range I See</u>	<u>What I use</u>
First audio amplifier coupling capacitor:	.005 $\mu$ f - .01 $\mu$ f	.01 $\mu$ f
Second audio amplifier coupling capacitor:	.005 $\mu$ f - .05 $\mu$ f .01 $\mu$ f typical	.01 $\mu$ f
Screen and plate bypass capacitor AM & Shortwave radios:	.01 $\mu$ f - .1 $\mu$ f .05 $\mu$ f typical	.1 $\mu$ f
Screen and plate bypass capacitor Longwave, AM & Shortwave radios:	.1 $\mu$ f - .2 $\mu$ f	.22 $\mu$ f
AVC capacitor at the volume control: These rarely ever go bad!	100pf - 250 pf	250pf
AVC capacitor at the mixer & RF stages:	.01 $\mu$ f - .05 $\mu$ f .05 $\mu$ f typical	.05 $\mu$ f
Cathode bypass capacitor in audio circuits:	.05 $\mu$ f - 50 $\mu$ f 4 $\mu$ f typical	20 $\mu$ f AF Out .05 $\mu$ f 1" AF
Cathode bypass capacitor in radio frequency circuits:	.01 $\mu$ f - .1 $\mu$ f	.05 $\mu$ f
Capacitor in series with single tone control:	.005 $\mu$ f - .05 $\mu$ f .01 $\mu$ f typical	.01 $\mu$ f
Capacitors across audio output transformers:	.005 $\mu$ f - .03 $\mu$ f 600v or higher	.005 $\mu$ f
<b>POWER SUPPLY FILTER CAPACITORS:</b>		
Late 1920's radios:	1 $\mu$ f - 4 $\mu$ f	10 $\mu$ f
1930's and up with full wave rectifier, 80, 5Y3, 5Z3, etc.:	8 $\mu$ f - 20 $\mu$ f	20 $\mu$ f
1930's to 1940's with 1/2 wave rectifier, 25Z5, 25Z6, 35Y4, 35Z5, etc. with field coil speaker:	10 $\mu$ f - 20 $\mu$ f	20 $\mu$ f
1940's to 1960's with 1/2 wave rectifier, 35Z5, 35W4, etc. without field coil speaker:	50 $\mu$ f 1st filter 30 $\mu$ f 2nd filter	50 $\mu$ f 50 $\mu$ f

## Photo Gallery



A Meck I used to own. This photo goes well with John Kellar's display.

Ed Dupart – editor

## Elkhart Meet August 25, 2001

The IHRS radio meet in Elkhart, Indiana was another success, thanks to the efforts of the northern IHRS members. We had a little rain but that didn't dampen our spirits, we just dug out our umbrellas and raincoats and played peek a boo under the plastic covered tables. Then the sun would come out and all the rain gear disappeared.

Fortunately, the park has an excellent shelter house where the meals are served, and the auction and contest takes place. Even some vendors set up outside under the porch area of the shelter house. The pitch in dinner was excellent and we got to sit around and talk radios with a short business meeting afterwards.

There were a lot of nice entries in the contest and I'm sure the judges had a hard time making a decision.

Transistor:

1<sup>st</sup> place – John & Mike Bart – cars

2<sup>nd</sup> place – Dr. Ed Taylor – Mickey Mouse

My Favorite Radio:

1<sup>st</sup> place – Ed Dupart – Crosley 6H2

2<sup>nd</sup> place – John Kellar – Meck Radio Display

1920's Radios:

1<sup>st</sup> place – Fred Prohl – Garad RAF

Tube Type

1<sup>st</sup> place – Chester Michalwski – Womens Travel Radio

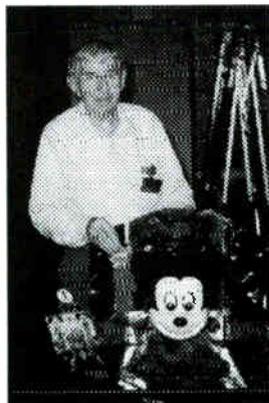
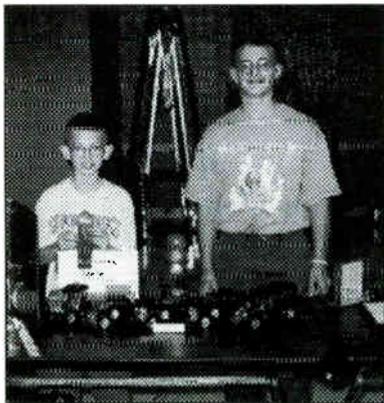
2<sup>nd</sup> place – Doug McIntosh – Bendix

Radios That Cost the Collector less Than \$20.00

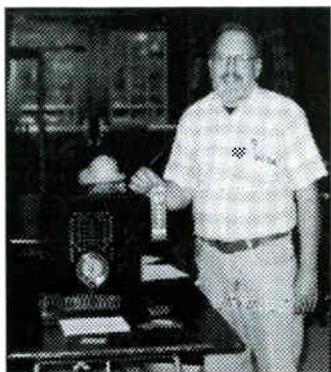
1<sup>st</sup> place – David & Julia Bart – Crosley Book Radio

ROSS SMITH BEST OF SHOW AWARD

John Kellar with his excellent Meck Radio display



1<sup>st</sup> place – John & Mike Bart – cars    2<sup>nd</sup> place – Dr. Ed Taylor – Mickey Mouse



1<sup>st</sup> place – Ed Dupart – Crosley 6H2



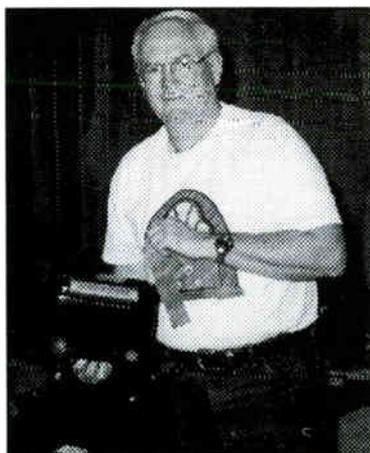
1<sup>st</sup> place – Fred Prohl – Garad RAF



1<sup>st</sup> place – Chester Michalwski  
Womens Travel Radio



1<sup>st</sup> place – David & Julia Bart  
Crosley Book Radio



2<sup>nd</sup> place – Doug McIntosh – Bendix



ROSS SMITH BEST OF SHOW AWARD  
John Kellar with his excellent Meck Radio display

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## RADIOADS

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**These ads are free to IHRS members. Please limit them to 100 words. Unless we are advised otherwise, we will run ads for two issues. The exception would be where services, etc. are being listed. Please send your ads to the editor at the address shown on page 2.**

**For Sale:** Book: "From Crystal to Color", the History of Radio/TV Station WFBM, Indianapolis (1924 to 1964) by George S. Madden & Burk Friedersdorf. First edition 1964 published by WFBM. Has 190 pages and is in excellent condition complete with dust jacket. Price, \$25.00

Novelty radio, solid maple wall telephone, excellent condition--  
\$30.00

Harry Blesy N9CQX,  
95740 Clarendon Hills Rd.  
Hinsdale, IL 60521

Phone/FAX (630) 789-1793

**For Sale:** Near mint copy of the AWA Review for 1998--\$20.00 postpaid.  
James Fred, 5355 S. 275 W., Cutler, IN 46920, phone (765) 268-2214.

**FOR SALE:** Reproduction Philco cathedral cabinet parts and reproduction cabinets for model 20, 21, 70, 90. Grandfather clock finials: Philco 570, GE H-91, Crosley 124. Philco Colonial Clock top trim and finials. Rider's Radio Index, 1 through 23 -\$20.00 ppd. Books, SASE for list. All plus shipping. Philco cabinets, front panels, see page 22 in Volume 29, #4 the Winter edition. Other parts, inquire. Call or e-mail for details. Note new phone # and address. Dick Oliver c/o Antique Radio Service, 1725 Juniper Place, #3 10, Goshen IN 46526. New phone # (219) 537-3747, e-mail dolivears@aol.com

**FOR SALE:** Coke Machine, Cavalier Model CSS 173. Refrigeration works and it's all there including the key. Holds a lot of 12oz. (or smaller bottles). \$250.00 The coke machine may be seen by appointment, but bring money.  
Mike Clark, 6484 East 350 North, Franklin, IN 46131.  
Tel. # (317) 738-4649, e-mail ripmaclark@aol.com

**FOR SALE:** Photocopies: Hallicrafters 8-22, Zenith 1000-1, Radiola III, 18, 60, 100A, 103, Majestic 52, and other radio, tube, and Test Equipment manuals. Also some Novelty radios. LSASE for list. N.I.B. Western Electric 421A-\$55 postpaid.

**WANTED:** Speaker/output xfmr. assembly for RCA 5T1. Herman Gross, 1705 Gordon Dr. Kokomo, IN 46902. (765) 459-8308,  
e-mail = w9itt@mindspring.com

**FOR SALE:** Novelty radios, N.I.B.: Pekinese Dog - \$20.00, Computer Mouse FM - \$15.00. Shipping extra. Steve Whited, 3637 W. 71st Street, Indianapolis, IN, 46268. (317) 298-9967.

**WANTED:**Philco 512 Mandarin Red radio w/212 Red speaker or 514 Nile Green radio with 214 Green speaker or 513 Labrador Grey metal radio with 213 matching grey speaker. I prefer the Red model.

Bob O'Friel, 7631 Cape Cod Circle, Indianapolis, IN 46250-1844 Phone,  
(317) 849.4028

**WANTED:** For Zenith model 6G601M portable. The knobs, front cover and Wave Magnet. Also need Wave Magnet for 7G605 Transoceanic, I could possibly adapt one from a 8G005Y if available.

Robert C. Pote, 1181 Crestwood Dr.

Greenwood, IN 46143, phone (317) 881-4521 e-mail =

mrzenith4l@aol.com

**Interested in TV history?** Want to see how it started? Try this Web site. You'll be amazed how far we've come.

<http://pyanczer.home.mindspring.com/Tour> Note: all lower case except the upper case "T" in tour.

Pete Yanczer, 635 Bricken Place, Warson Woods, MO 63122-1613

**FOR SALE:** Remler infradine amplifier, type 700, panel mounted on copper box, excellent condition less tubes--\$100.00 plus shipping. 3 used 2O1As--\$45 plus shipping. AK Model 49, includes battery cable, no tubes--\$ 100.00 plus shipping. James Fred, 5355 S. 275W, Cutler. IN, 46920, phone (765) 268-2214.

**FOR SALE:** Novelty Radios N.I.B.: Computer mouse-\$15.00; Pepsi machine, old style-\$20.00, shipping extra. Steve Whited, 3637 West 71st Street, Indianapolis, IN, 46268. (317) 298-9967.

**FOR SALE:** Book, "The Story of Kolster Radio", 1928, HC. 46pgs 8 1/2" x 11", color and b & w with silver borders, company history and product line, beautiful blue and gold book showing some cover wear otherwise excellent--\$50.00. Harry Blesy, N9CQX, 95740 Clarendon Hills Rd.. Hinsdale IL 60521, ph (630) 789-1793

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