

The
Indiana
Historical
Radio Society

BULLETIN

Vol 35

December 2006

No 4

**"What's in the
air tonight?
Listen, all is well!"**



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Restoration of a Zenette - page 22



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

IIRS Web site address: www.indianahistoricalradio.org

The INDIANA HISTORICAL RADIO SOCIETY is a non-profit organization founded in 1971. Annual membership dues of \$15.00 includes the quarterly IIRS "BULLETIN." Radio-Ads are free to all members. Please include an S.A.S.E. when requesting information. Send applications for membership and renewals to Herman Gross, our treasurer as noted above.

The Indiana Historical Radio Society 2007 Meeting Schedule

Winter Meet - Hornet Park, Indianapolis – February 10

Spring Meet - Johanning Civic Center, Kokomo – May 4&5

Summer Meet - Ligonier Community Center, Ligonier – August 11

Fall Meet - Riley Park, Greenfield – October

Regional Events of Interest to Members

Mid South Antique Radio Club For information contact George Freeman jgfree@verizon.net

Antique Radio Club of Illinois www.antique-radios.org Next meet – December 10, 2006 - American Legion Hall, Carol Stream, Illinois

Michigan Antique Radio Club see www.michiganantiqueradio.org

AWA-Antique Wireless Association www.antiquewireless.org

The original and largest historical radio group. The AWA publishes a quarterly Old Timer's Bulletin. Membership is \$20 per year. Write to: Antique Wireless Association, Inc.Box E, Breesport, NY 14816

2007 IHRS DUES NOTICE

Your Indiana Historical Radio Society membership is now due if your mailing label reads 12/06 or earlier. Please send a check payable to the **Indiana Historical Radio Society** in the amount of \$15.00 per year.

Send your payment to:

**Herman Gross, IHRS
1705 Gordon Drive
Kokomo, IN 46902.**

Please include your current mailing address, if not on your check, and your email address, if you have one. Membership questions? Contact Herman at hw12x12ihrs@sbcglobal.net or call him at (765) 459-8308.

Dues change notice! Effective January 1, 2007, IHRS annual dues will be \$15.00 per year. (The two year renewal option will be dropped.) Take advantage of the 2006 policy and send in a two year dues renewal of \$25.00 before the end of December 2006!

President's Column

I took over as IHRS President at the October 7 meeting in Greenfield. For those of you who don't know me, I'm Mike Clark and I've been in the club about 18 or 20 years. Unlike many of you, I do not have a background in the radio industry. I am a retired physician and professor of pathology at the Indiana University School of Medicine. My interest in radio goes back to the 1950's when I used to bring home radios from the nearby Salvation Army store in my wagon. Sometimes, they would work and, sometimes, I'd be able to repair them. Many of the radios I brought home were reduced to parts and I still have some of these parts from 50 years ago. I have retained my interest in radio over the years and have continued to bring home orphan radios and give them a good home.

As far as I can tell, there are no major problems in the club that need fixing. Our major expense is one over which we have no control: postage. The US Postal Rates are now tied to gasoline prices and if gas prices go up and stay high, postage rates will rise. We also face challenges with regard to dwindling membership numbers. We are currently seeing attrition of our membership through the death of members. We can all do our part by paying our dues on time and saving the club the expense of mailing out dues notices. It would also be nice if we could recruit new members. An IHRS membership would make a nice, personal gift to a friend who is interested in radio and its history in Indiana.

We have a schedule of meetings for 2007 in this issue. I would encourage everyone to attend and participate. If any of you have any concerns or suggestions, please communicate them to me. My email address and street address are found inside the cover of this Bulletin. Best holiday wishes to one and all.

Michael A. Clark

At the annual Greenfield meeting of the Indiana Historical Radio Society members elected the following to serve as 2007 officers: Michael Clark, President; Alex Whitaker, Vice President; Herman Gross, Treasurer; Michael Feldt, Secretary; Fred Prohl, Editor; Ed Taylor, Historian; and Fred Schultz, Museum Curator.

Indiana Historical Radio Museum – Report



At the annual Indiana Historical Radio Society October 2006 meeting, Museum curator Fred Schultz gave the following Museum/WNRL report to members:

The Indiana Historic Radio Museum expenses include insurance, security system, heating and cooling, maintenance, and showcase purchase totaling approximately \$2500.00 per year.

WNRL FM radio expenses include telephone and DSL, ASCAP, BMI, SESAC, and equipment totaling approximately \$3000.00 per year.

Income for both the Museum and the Low Power FM station is received from the Noble County Community Foundation and WNRL supporters.



(The radio station cannot advertise but can underwrite and report voluntary contributions.) Sources of income total approximately \$5500.00 per year.

A variable source of income is gained from the sale of radios and radio related equipment donated to the Museum. Fred explained, "if an item cannot be displayed it will be sold with the total of the sale going to the Museum fund." He further explained that when a donation is made, the donor signs a notice that the gift may be sold for operating costs. He also described his storage of Museum radio equipment independent of his own collection. Radio equipment is held in storage for periodic rotation of the Museum's display and/or possible sale.

Fred reminded the group that in the event of the Museum's closing, it is written in the Museum's charter that the radio equipment belonging to and donated to the Museum and its assets go to the Indiana Historical Radio Society.

The current IHRS Museum/WNRL Board of Directors consists of Fred Schultz, Terry Ernsburger, Andy Schultz, And Everett Newman. As required by FCC regulations, all members must live within a 15 mile radius of the Low Power FM Station. The recent deaths of Fred's daughter Marcella, and Joe Miller, (both Board members), resulted in a loss of half the Board, requiring a special exception by the FCC.

Fred Prohl, reporting

The cover – “When Santa Listened In”

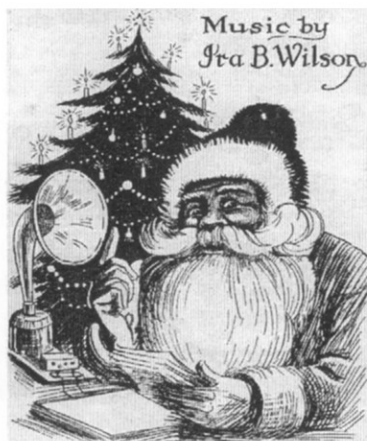
“What’s in the Air Tonight?”

Oh, I’m a radio agent, as you can see,
And that’s what brings my popularity;
I pick up radio-grams –

That tell the price of hams,
Or listen in on some big concert free.
What’s in the air tonight?
Would you have me tell?
What’s in the air tonight?

Listen, all is well:
There is a spirit of giving,
Of kindlier living,
Oh that is on the air tonight.
The vibrations in the diaphragm are clear,
And you’ll be surprised what lovely things you’ll hear;
If you get in tune at mid-night or at noon,
The sounds from round the world will be brought near.

What’s in the air to-night?
Would you have me tell?
What’s in the air to-night?
Listen, all is well;
There’s a spirit of giving,
Of kindlier living,
Oh, that is in the air to-night!



From: A Santa Clause Cantata, published in 1923
by the Lorenz Publishing Company, Dayton, Ohio

Fun and Games with M.P.A.T.I.

By "Grey Behr"

Educational television is not a new phenomenon. In the early sixties a television service was offered to schools by Purdue University called M.P.A.T.I. – short for Midwest Program of Airborne Television Instruction. These broadcasts were originated from a DC-6 four engine propeller driven aircraft with a folding transmitting antenna hinged upside down on the belly. The plane was crammed with video tape equipment and transmitting gear. The equipment broadcasted on ultra high frequency channels 72 and 76 (UHF was a rarity at the time except in cities).



The plane orbited in a three mile circle 20,000 feet above Montpelier, Indiana during broadcast hours. Lawrenceburg, Indiana, where I worked as a repairman and installer, was on the fringe of the broadcast, but our schools wanted the service if my boss and I could intercept the signal. The schools would buy the television receivers from us if we were successful. We ordered the highest gain UHF antenna available – an in line 'yagi' array at the focus of a ten foot diameter elliptical reflector of aluminum tubing.

So much for the fun – now came the games! In theory, the signal was re-enforced at nodes above ground of 20 ft., 40 ft., 60 ft. etc., by coincidence of direct and reflected signals from the distant plane. I could find these signal nodes by experimentally raising and lowering the antenna – then scampering down and into the building to check the reception (no portable monitor here!)

Fun and Games (continued)

The fifty pound antenna plus connectors were mounted on forty foot telescoping masts extended by muscle power. Each precarious extension was accompanied by an adjustment of three guy wires! At the end of each day I was exhausted.

The UHF tuner/converter units at the top of the masts were special three volt tube equipped exotics with the power sent up the download. Any adjustment or tube replacement necessitated the lowering of the antenna or the use of a 'skyhook'!

With hard work and dumb luck we made three successful installations with Magnavox 27 inch table model B&W tube type receivers. The two UHF channels were converted to vacant VHF channels on the big sets. With the running of hundreds of feet of 72 ohm co-ax cable and installation of distribution amplifiers to multiple sets we closed the fun and games of M.P.A.T.I. *Grey Behr continues to entertain Bulletin readers with his work experiences. IHRS member, Cogley Hall, AKA Grey Behr, now resides in Texas.*

A brief history of the MPATI as reported by Dave Gibson at the web site soita.org (2001)

Forty years ago, the Midwest Program on Airborne Television Instruction (MPATI) began broadcasting instructional TV programs to schools in a six-state region. Based at Purdue University, MPATI was a unique and pioneering effort in the field of distance learning. From 1961-68, hundreds of Ohio school classrooms received the broadcasts from a DC-6 aircraft, now fondly remembered as the "Satellite of the Sixties."

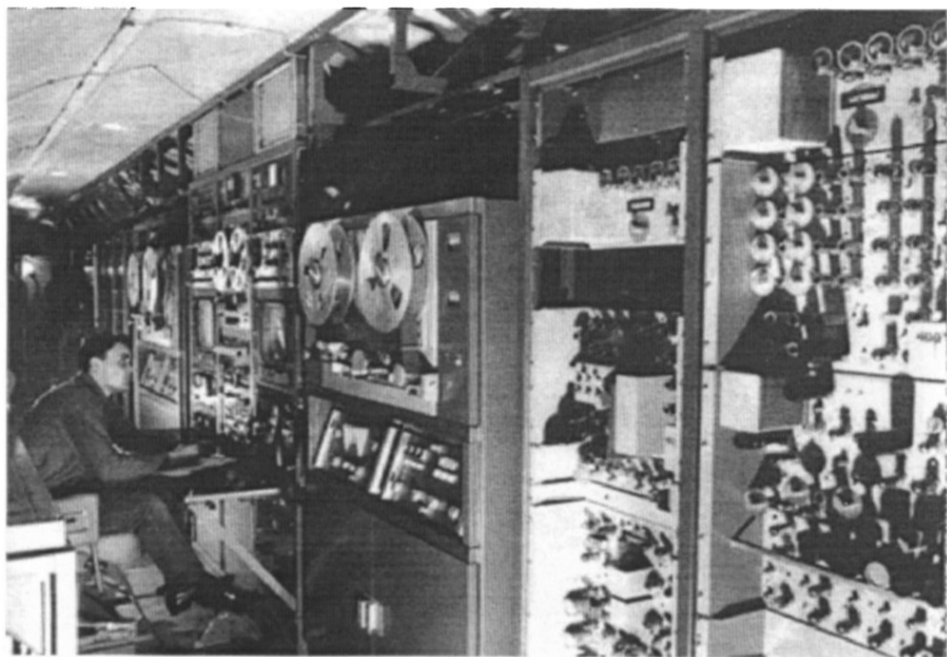
Airborne offerings included a wide curriculum for both elementary and high school students. These courses, outlined by the airborne teachers, included a lesson guide for those teachers who planned to participate. The lessons attempted to correlate objectives with Midwestern school practices and requirements. Along with printed information, teachers were also offered an afternoon each week to receive special professional materials by broadcast which provided the latest information, techniques, trends and ideas to use in conjunction with these resources. Workshops were also offered during the summer to extend professional development.



To become an airborne teacher, you had to submit a biography and an audition film. These were reviewed by a 22-member TV Teacher Preliminary Screening Panel. Teachers were selected on the basis of teaching ability, ability to make effective use of television for teaching, and competence in their subject-matter field.

The teachers that were selected attended a 10-week workshop at Purdue the summer of 1960. These new airborne teachers began preparing their courses, developing the tapes that would be seen across the Midwest in participating classrooms that fall. Each of these teachers had previous classroom teaching experience and nearly all had several years of teaching by television.

Two DC-6 planes were identically equipped to run the broadcast programs for MPATI while flying in lazy eights about 4 miles above the town of Montpelier, Indiana. One would fly while the other was on the ground at the Purdue University Airport as a standby in case of mechanical or weather problems.



Fun and Games (continued)

These flying classrooms were "elongated" television stations, filled with six and a half tons of TV and related transmitting equipment. Signals were transmitted simultaneously to two ultra-high frequency channels, 72 and 76, allowing for two separate programs to be transmitted at the same time. These signals were broadcast by means of a 24-foot-long retractable sending antenna that extended from the underside of the airplane. Each four-engine DC-6 carried a crew of six men -- three flight crew members and three television technicians.

Dave Gibson is the Executive Director of the Southwestern Ohio Instructional Technology Association. (SOITA)

1923

Live in or close to Springfield, Ohio? Graduate of Wittenberg?
The picture below is from the 1923 Wittenberger – the school yearbook for Wittenberg College in Springfield. The man seated to the left may be Edwin Weaver, Professor of Physics. It would be an interesting challenge to find out more about the radio set up. What is/was the call? Is there documentation and/or pictures in the Wittenberg archives? Take up the challenge and let us know what you find!



Readers. Can you identify the equipment displayed in the above picture?
Let the editor know.

IHRS Contest Categories for 2007 – Prepare Now!

Winter Meet - Hornet Park, Indianapolis – February 10, 2007

- 1 Radio Advertising
2. Diode/Germanium radios

Spring Meet - Johanning Civic Center, Kokomo – May 4&5, 2007

- 1 Open
2. Made in Indiana
- 3 Homebrew receiver or transmitter
4. 1920's Battery Radios (table or console)
- 5 Transistor radios
- 6 Crystal sets (pre 1930)
- 7 pre 1940 AC radios (table or console)

Summer Meet - Ligonier Community Center, Ligonier – August 2007

- 1 Portable tube radios
- 2 Cost me less than \$20.00

Fall Meet - Riley Park, Greenfield – October 2007

- 1 My favorite radio
- 2 Amateur Radio Equipment – any vintage

Tables will be available at each meet for Vintage Radio Displays.

******** Treasurer's Report - Greenfield – October 7, 2006***

Receipts: Donations	\$36.80
Registrations	\$220.00
Non Member Registrations	\$40.00
Bulletin Sale	\$10.00
Sub Total	\$306.80
Membership renewal	\$190.00
Total receipts	\$496.80
Expenses: Donuts	\$25.00
Chicken for lunch	\$102.82
Insurance	\$35.25
Facility rental	\$125.00
Total expense	\$288.07

Total meet results: \$306.80-\$288.07=\$18.73

Herman Gross, IHRS Treasurer

IHRS Winter Meeting – Hornet Park, Beech Grove Saturday February 10, 2007



**Meet at the Hornet Park Community Center, 5245 Hornet Avenue,
Beech Grove (South Indianapolis)**

A Swap N Sell indoor meet - 8:00AM to 12 Noon (Setup 7:00AM.)

Old Equipment "Popular Vote" Contest categories:

1. Radio Advertising
2. Diode/Germanium radios

Table space will be available for non-contest radio or radio related items you would like to display.

Registration fees: \$5.00 to register. Swap table rental - \$5.00 each for IHRS members; \$10.00 each for non-IHRS members. Tables are round, five foot diameter. Bring a cloth to protect the table.

There will be an IHRS business meeting at Ponderosa immediately following the meet.

The Hornet Park Community Center is three streets north of south-east I465, exit 62 (Emerson Avenue, Beech Grove). Travel north from I465 to Hornet Avenue. Turn right at Hornet Avenue – the Community Center is about two blocks east on the right.

Meet contacts: Fred Prohl, 812-988-1761 or Ed Taylor, 317-638-1641.

Tube Testers

By
Ed Dupart

A friend asked me, "Why does a tube test good in an emission tester and not in a mutual conductance tester? I couldn't answer him with a good answer and neither could others that he asked, so I did a little research and that resulted in this little article. I figured if he asked that question, then others probably have the same question.

There are two basic popular types of tube testers, the emission tester and the mutual conductance tester and variations of each. The emission tester generally ties all the grids and the plate together and applies a voltage between the cathode/filament and the plate with an ammeter in between. When you push the test button, current flows from the cathode to the plate and the meter measures how much. The mutual conductance tester applies proper voltages to all the grids and the plate with an AC voltage to the control grid. This is a much better test and with the AC voltage applied to the control grid the tester is measuring the change in grid voltage versus a change in plate current^{2,3}.

The emission tester is only testing the emission of electrons, wherever the electrons are being boiled off the cathode. It turns out that after a tube is used it can develop "hot spots"¹, small areas on the cathode that are boiling an intense amount of electrons in comparison to the rest of the cathode. So it is possible to have a weak tube where all the emission is coming from one small spot on the cathode, so this tube could check good on an emission tester. The mutual conductance tester is testing all of the cathode because of the varying AC voltage on the control grid and the grid will have very little effect on a hot spot and so the tube will check weak. Other factors that can cause a change in the mutual conductance are spacing changes in the elements, which could be caused by mechanical damage² due to dropping or shaking and overheating which could cause warpage.

Is the emission tester useless and is the mutual conductance tester infallible? No to both questions. The emission tester is useful when working on the majority of old radios which have circuits that aren't super critical, and generally, I find that if the tube has emission and no shorts, it will work OK in an old radio.

Tube Testers (continued)

If you are working with high quality audio amplifiers where tubes need to be matched or in any circuit where tubes need to be matched, then the mutual conductance tester is the one to use. The mutual conductance tester is also the better tester to use when working with oscillators, especially ones that are troublesome, but I have had tubes check good in the best Hickock tester and still be bad. In this case, tube substitution is the best check and is what I did when I did a lot of servicing. The tubes that checked good in the Hickock tester, but didn't work quite right in the oscillator circuit, usually worked OK in lower frequency circuits and I would save those tubes for less critical circuits.

Now, you are probably asking, "What kind of tester am I using?" I mentioned the Hickock tester and I had a top of the line one, but it was cumbersome to use and I parted company with it a long time ago and as I mentioned earlier, it wasn't infallible. If I were doing a lot of high quality audio work, I would want it back again. The Hickock tester is considered to be the number one tester by many in the electronics industry and the Jackson mutual conductance testers as number two. I have a Jackson 648A and 648S mutual conductance tester, a Sencore Mighty Mite emission tester and a Superior Instruments TW-11 emission tester, which is my favorite. The TW-11 is small, in an attractive wood case, easy to use and good enough for old radios, but will not test the newer tubes of the 1960's-70's, such as Compactrons®, Nuvistors® and Novars®. My Sencore tester is good for testing the newer tubes of the 1960's-70's, but again, it is only an emission tester. I use the Jackson testers for more critical tests, but in my opinion, they are not as good as the Hickock. Much more could be said about tube testers, but hopefully this will give you a little more insight into a valuable piece of test equipment.

References:

1. RCA Receiving Tube Manual, Technical Series RC-19, 1959 pg. 335 (Most newer editions have this information.)
2. Radio Physics Course, Ghirardi, Radio and Technical Publishing Co., New York City, 1933 pg. 431-435
3. Practical Testing Systems, John F. Rider, Radio Treatise Co., Inc., New York City, 1930 pg. 58-73

IHRS member, Ed Dupart, is noted for his knowledge of vintage radio circuits. He is a frequent contributor to the Bulletin as well as a presenter of radio repair and restoration seminars at IHRS radio meets.

The 201A Characteristic Curve

The November 2006 issue of "Nuts and Volts" (a great magazine for keeping up with current electronics) features a Tribute To The Tube; the Triode Turns 100. The tribute includes six articles ranging from the history of the triode to vacuum tubes for the 21st century, but there is little about the technology of the triode. The fundamental characteristics of a small electronic charge controlling a large electron flow allowed the development of 'radio'. Maybe the appeal of the sweeping slope of a triode's plate current is a unique to me but the story of radio lies in the *valve's* characteristic curve. A great term for the vacuum tube – valve – a device to control the flow of electrons – a little change here results in a large change there. A 1929 publication of New Laboratory Experiments in Practical Physics, by N. Henry Black has an experiment titled "Electron Tube". The "Electron Tube" procedure is placed between experiments titled Spectrum Analysis and Time of a Falling Body. It is a good review of the basic function of the triode vacuum tube. The experiment follows, inviting you to give it a try. (I did, and my results follow the experiment procedure.) Fred Prohl

A 1929 Physics Experiment from NEW EXPERIMENTS IN PRACTICAL PHYSICS N Henry Black, 3rd edition, 1929

RADIO Experiment 65

ELECTRON TUBES *What are the characteristics of a three-electrode vacuum tube?*

Equipment required:

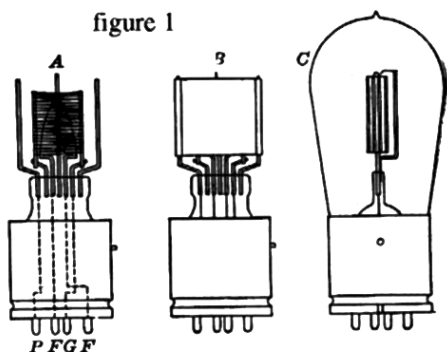
Radio receiving tube (such as)
UX-201A and socket
Filament rheostat (10 ohms)
Voltmeter for filament
Milliammeter for plate circuit
(0-5) such as Weston 301
Grid battery C (12 volts dry cells)

Plate battery B (45 volts, dry cell)
Filament battery A (6 volt storage)
Voltmeter (0-30 volts)
Rheostat to be used as a potentiometer
Two-pole double-throw switch

A 1929 Physics Experiment (continued)

Introduction. The electron tube is a recent invention which has made possible many important advances in radio communication. This tube not only serves as a detector of radio oscillations but is also used to generate, to amplify, and to modulate these same oscillations. It has found many applications in other fields of electrical engineering, such as in ordinary telephony with wires, where its use has made possible conversation over great distances (3000 miles).

The form of the tube is being rapidly improved. But the operation of this tube of whatever form and for whatever use depends on the properties of very minute particles of negative electricity, called electrons. A common form of detector tube contains, besides the filament, a plate and a grid (Fig 1). For this reason it is called a three-electrode



Electron tube: A, Filament with grid around it; B, plate mounted; C, Side view of complete tube.

vacuum tube. The incandescent filament shoots off electrons at a high velocity, each carrying its charge of negative electricity. If the plate is positively charged, there is a passing of electrons to the plate which is equivalent to the flow of current from the plate to the filament, according to the usual idea of the flow of an electric current from the positive to the negative potential. Please note this distinction between the direction of electron flow and current flow.

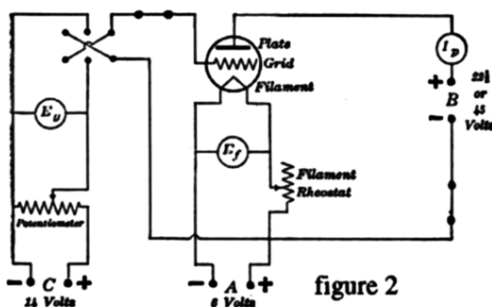
Nevertheless remember that the magnitude of the current flowing through the tube from the plate is determined by the number of electrons that travel across the tube and reach the plate per second. If we increase the filament current, we thereby increase the filament temperature, which means that more electrons are shot off. If we increase the plate voltage, we also increase the number of electrons reaching the plate every second, which means that we increase the plate current.

By introducing the grid between the filament and the plate, we have another most effective means of controlling the plate current. By making the potential of the grid positive or negative as regards to the filament, it is possible to hasten or obstruct the flow of electrons and thus to vary the plate current.

In this experiment we shall study the relation between the grid potential and the plate current. As a result of our measurements we shall be able to plot a characteristic curve to show graphically this relationship, because it is upon such a curve that the most commonly accepted explanation of the tube's operation is based. This is only one of several characteristic curves which are used to study the relationship between the several factors – plate potential, plate current, grid potential, grid current, and filament current. Two variable factors having been selected, the other three must remain fixed.

Directions. Connections.

The apparatus should be connected up as shown in figure 2. It will be seen that besides the "A" battery in the filament circuit and the "B" battery in the plate circuit, we have a third battery in the grid circuit. It will also be noted that there is a rheostat placed across



the grid battery C to serve as a potentiometer and also a reversing switch so that we may quickly get various positive and negative grid potentials. The milliammeter (I_p) in the plate circuit measures the plate current, and the voltmeter (E_g) measures the grid voltage. The filament current is kept constant by a filament rheostat and voltmeter, and the plate voltage is also kept constant by means of a "B" battery.

First adjust the filament rheostat until the filament voltage as indicated by the voltmeter E_f is normal; that is, whatever is specified by the makers of the tube as normal. Then make the plate voltage 45 volts. Now measure the plate current for several potentials of the grid referred to the filament, such as -6, -4, -2, 0, +2, +4, +6 volts. It will be found convenient to insert a two-pole double-throw switch in the grid circuit in order to change quickly from positive to negative potentials.

Results. 1. Plot on coordinate paper the grid voltages horizontally and the plate current (in milliamperes) vertically.

2. If time permits, repeat the experiment using 22.5 volts as the plate voltage, and again using 67.5 volts.

The characteristic curve will well repay careful study. If the plate current increases directly as the grid voltage, then the curve will be a straight line. Is your curve or any part of it approximately a straight line? What does it mean? If the plate current increases more rapidly over a certain range than over another (for a given change in grid potential),

then the curve will be steeper over that range. What part of your curve is steepest? What does this indicate? If the tube reaches a saturation point where an increase in grid potential produces almost no increase in the plate current, the curve will flatten out into a horizontal line at the upper extremity. Have you reached the saturation point?

In using such a tube as an amplifier, it is desirable to arrange the conditions so that a change in grid voltage will produce a proportional change in plate current. What grid potential would you suggest as desirable for your tube? Why?

the Electron Tube Experiment Report

My intent (as the student, "A" student that is) was to complete the "Electron Tube experiment using vintage 1929 equipment in an effort to duplicate the school

conditions. I adjusted my plan for the following reasons: The parts list seems to suggest using a filament rheostat as a voltage dividing potentiometer across the grid battery –

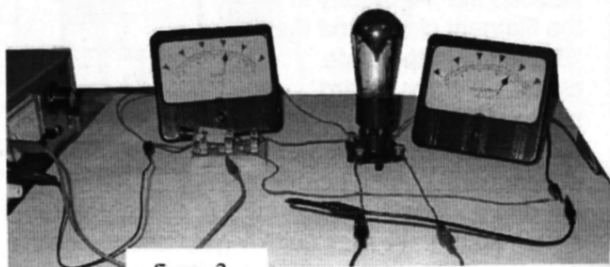


figure 3

this means 7 to 10 ohms parallel to 12 to 14 volts dc – a 1.5 amp or so drain on the battery. So instead of locating a 400 to 1000 ohm high wattage potentiometer for the grid voltage, I chose to use an isolated variable power supply to eliminate the grid battery. Once I deviated from the parts list I opted to use variable power supplies for the filament and plate voltages as well, allowing me to set up a circuit for testing vintage four pin triodes.

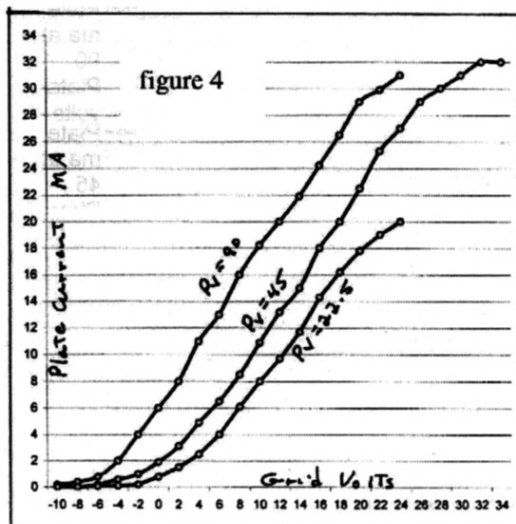
The circuit drawing in figure 1 is missing a connecting path for plate current – a wire should be shown on the drawing connecting the –A supply to the –B supply. (I bet many students had their hand in the air asking for help on "why no plate current?"). As shown in figure 3, I kept the knife switch in the grid circuit for ease switching grid polarity.

Figure 4 is the resulting 201A characteristic curve for plate voltages of 22.5, 45, and 90 volts. The horizontal plot is grid voltage, the vertical is plate current. Tube cut off was easy to identify for the three plate voltages. Saturation, the point where no more electrons were available from the cathode (filament), was not as easy. Initially I used a

galvanometer to monitor the grid +or- 15 volts and a plate current ammeter of 0 to 15ma. Plate current for all three plate voltages was still on a linear rise at 15ma and or 15 grid volts. So I changed meters and arbitrarily selected a plate voltage of 45 volts to search for tube saturation. At about a positive 30 volts grid potential the curve began to top off, indicating saturation was close.

Aware that the grid potential was approaching plate voltage, I measured a grid current of 13ma at 32 volts grid voltage. At that point I decided not to punish the tube any more by attempting saturation at the other two plate voltages. It is interesting to note that popularity of some guitar tube amps is dependant on swinging the tube from cutoff to saturation. I don't think the 01A would survive the punishment.

Fred Prohl

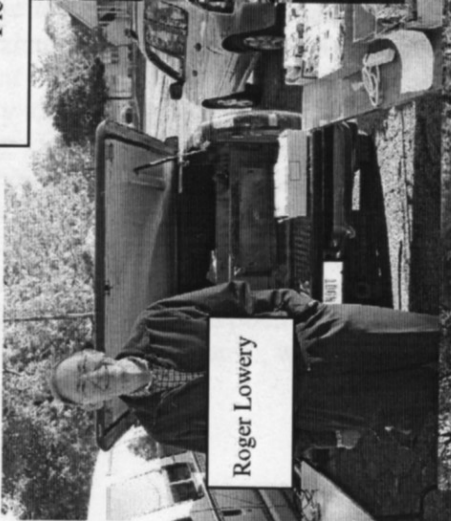




In the Wet Sanding article of the September 06 Bulletin the suggestion is given to use auto wax to protect a stained wood finish. It is highly recommended testing the finished surface with the wax before full use of the product.

IHRS at Greenfield – October 7, 2006

Pictures by Ed Dupart



Roger Lowery



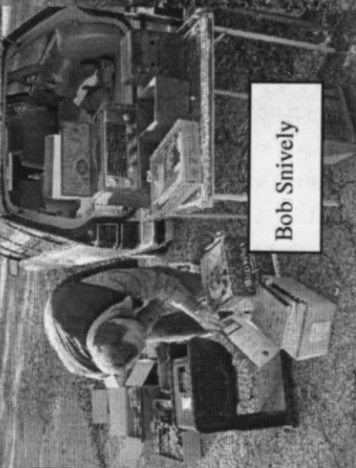
Nick Pendergrass KB1WB



Eldon Horton



Bob Pote & Fred Prohl



Bob Snively



Bill Arnold



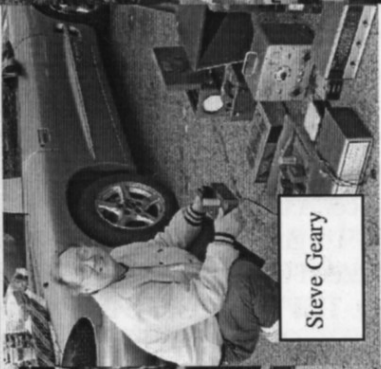
Ed Dupart & Bill Morris



Bob White & Andy Schultz



Fred Schultz



Steve Geary



Francis Hudlow

It's gotta be here
somewhere!

THE RESTORATION OF A ZENETTE

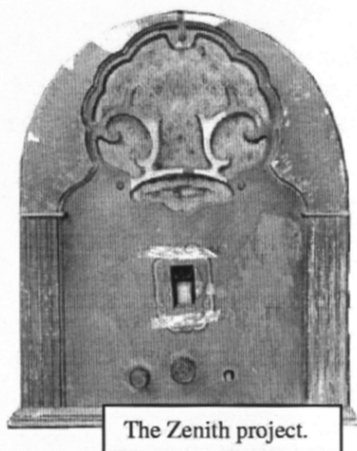
By Bill Arnold Washington, Indiana

Back a few months ago, I ran across a Zenith Cathedral radio. It was described as "rough". I decided since Zenith cathedrals are a little hard to come by, it might be worth salvaging even if I had to do a lot of work on it. After all, I have been known to buy radios that need restoring if they are cheap enough. I can pretty well tell if it is something that is restorable or if it requires more than I can do. I would have to see it before I could tell that. Of course, sometimes there is just not enough left to restore.

When I first saw a picture of the radio, I wondered if I would be able to make a good looking cabinet out of this one or if I would just have to try to find a good cabinet. There seemed to be a lot of wood missing in the grille area. This would have to be fabricated and I had no way to do that with what I have to work with. I needed a very intricate router bit and even at that, I am not sure I could do it. Of course, I didn't know if it worked. I liked it though and bargained for it at that time because I thought I would be a good one for my collection.

I figured it was worth the money but I needed to see if I could get the chassis playing. This would tell me if the cabinet was worth fixing or if it would be a parts radio. After all, the two knobs that were on it were wrong and part of the grille area was gone. It also had some rust on the chassis and overall it was dirty. I suppose that is why it was cheap. I told all of my friends it met my two requirements, cheap and rough. I will admit, it was about the worst one I had bought in a while.

I got it in Bolingbrook, Illinois at a radio show from another collector. I didn't know if he would be there but he said he would bring it since he knew I would be there. Up to that time all I had seen was a picture of it another collector had sent me. I really knew nothing about it as did the collector that sold it to me. I figured it was cheap enough that I could take a chance. I knew that in good shape it was a fairly high dollar radio.



The Zenith project.

I did make the deal on it and loaded it up along with others that I bought and various radios that my friend from Shreveport had bought there. He had come up for the show and was staying with me for a few days.

After I got it home, I found a broken tube which was not discovered when I bought it. Luckily it was a 24A and I had a stock of them. It didn't take long to put in another tube and power it up enough to see if it was worth salvaging. I replaced the filter capacitors first to make sure I didn't damage anything and to my surprise it did make some noise. This told me the power transformer and the audio was working. I also remember getting a faint station or two which told me the oscillator and IF cans were good. It was very weak but I knew from that, I could make a radio out of it. After that, I spend several days of reading the diagram and troubleshooting the radio to get it in good working order. I really didn't find much wrong with it but it just needed the usual capacitors, adjustments, cleanup and a good going over. As I remember, it didn't take a lot of money but took a lot of time to get it playing as it should. It sat on the bench for several days while I decided what else to do. At least I knew it was worth investing in a good cabinet.

I had contacted a man I saw in Bolingbrook at the radio meet in August to see if he had a cabinet and he assured me that he did have a good cabinet. That was to be the plan, I would change the cabinet if I could get the radio working. That might be expensive but there was no way to duplicate the grille area since I didn't know exactly what it looked like. I would have to have another cabinet to tell what the pattern was like. The cabinet that he had was back in a storage area and since he was busy, it might take a while. I was not in a big hurry although I was anxious to get a case since I had it playing.

I called the next week to check on the cabinet and I was guessing it was only a matter of time before he could dig it out for me. I patiently called each week for the next few weeks to check on the status and was told to not give up that he indeed had the case but to keep reminding him. That I did without trying to be too much of a pest. It was actually the last part of September before I got the cabinet.



The donor cabinet.

Zenette (continued)

Finally, on my last call, he said that he saw it but had too much other stuff to carry back inside but if I would give him a call in about ten minutes, he would bring it inside so he could describe it to me over the phone. That was good news and I was hoping to get a nice restorable cabinet. Actually, it turned out to be a cabinet in pretty sad condition but with the needed parts to restore mine. I had done that before and knew it took a lot of time to get it looking nice. It is always a gamble when you buy them in this condition.

Never-the-less, I knew that I would have to work with what was available. After all, if I found one with a nice cabinet, it would be too expensive for me and besides, I didn't want to buy the whole radio and good cabinets by themselves are hard to find. As I listened to the description, I knew pretty well what to expect. I was to get a parts cabinet. In fact, it could be worse than the one I had. I was told that there were several areas where the veneer was de-laminated but the grille area was all there. That was what I was mainly interested in. Of course, the price was almost half of what I was originally told because it was so rough. Soon I was satisfied with the description and I decided to take it.

In a few days, the cabinet arrived packed well and although I wanted to find a better cabinet, I thought I could make one good cabinet out of what I had. Of course, I needed to do some work to the original one before all of that started. The front panel was loose from the rest of the cabinet and the rear arch support had to be re-attached. I knew that I would have to do that to make it stronger before I started any repair job. I was holding off on that because I might come up with one that needed only minor work. Neither cabinet was great but I hoped to make a decent radio given enough time and patience.

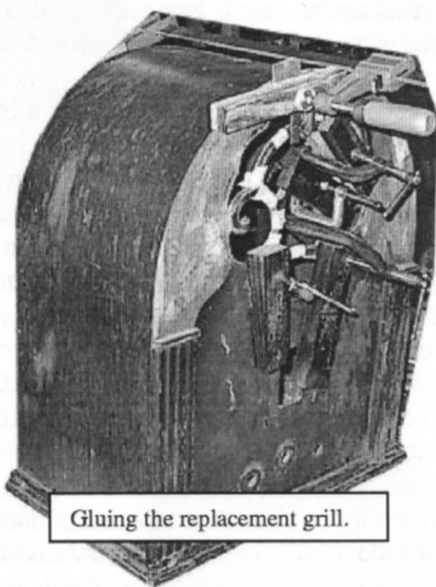
The second cabinet did have the grille area intact but the veneer was coming off in the front as well as the layer of cheaper wood on the back side of the front panel. There was a big area at the bottom of the right hand side that was no longer attached to the cabinet and the front panel was not glued to the cabinet. It also was missing one of the columns. Apparently, this radio had been in a damp area as the grille area was also warped and was bowed away from the cabinet. Clearly, this was not as good as the one I had. If I were to replace the front panel, I would not only have to do the repair work but would also have to somehow or another fix the warped area. I did see that the original grille cloth seemed to be usable. That was great news since the original style is not made.

After a quick assessment, I decided what could be done successfully was to take the grille area out of the second cabinet and transplant it into the first cabinet. This required taking off the burl wood and related pieces around the front arches. I also removed the wood at the top of the columns. I had to have a flat panel to work with. Some of the burl wood needed to be replaced so I used parts from each cabinet to come up with a good pair. One of them was warped and I remember wetting it and putting it between two pieces of wood to hold it in this shape until it dried. That took the warp out of it and I installed it right away to keep it from distorting again.

Once I had a flat panel, I cut the grille area in five places, removed the remaining parts of the original cabinet and smoothed that area to accept the wood from the second cabinet. It was merely cut out with a fine toothed saber saw. This section was cut out oversized and trimmed slowly to fit into the cabinet. When I was satisfied with the fit, I started to put the layer of wood on the back of the panel. As I glued and clamped, the piece gained strength and also lost its warpage. This back layer was done in sections and trimmed to fit. It took several days to do these sections and let them dry before the next step.

Once the rear of the front panel was finished and sanded, I got all of the veneer that had come off the front and put it on a section at a time. I had to patch in several areas that were missing but that veneer was obtained from the second cabinet. That seemed to match better than using new and trying to make it look old.

When all of these areas were dry, I used a file and a sandpaper block to smooth them up. Now it is barely noticeable that it has been repaired. I made my seams with the grain so it is less noticeable. I took my time and now it looks pretty good although I know where the repairs have been made.



Gluing the replacement grill.

Zenette (continued)

Finally, I was ready for the stain. I gave it a coat of Walnut and let that dry overnight. The arched area was still a little light but the next day I put the finish on and with some careful application of toner, I made the arch areas and the moldings darker as they were originally. I believe it is as close to the original color as I can make it.

I did indeed use the original grille cloth but it had to be sprayed with some gold colored lacquer to cover a couple of spots. That worked quite well and it also made the grille cloth a little stiffer. Now it is not subject to tearing and also retains the original look since the cloth is not available.



After all of the repair work had been done, I installed the chassis in the cabinet. It looked pretty good but it still needed some minor work to get it the way I wanted it. The fahnstock clip for the antenna needed to be replaced and I decided to put a new cord on it for safety. I wasn't happy with the grille cloth and took it out and re-stretched that. It was missing knobs but I put a set of Philco knobs on it until I get the right ones.

I polished up the escutcheon and clear coated it as I do all of my radios. The only thing that will be a reproduction is the knobs and the power cord. I didn't have the knobs but they tell me the new ones are identical to the originals and to me that does not take away from the value. My guess is that the radio is uncommon enough that you would never find the originals, anyway.

All in all, it took me a week of gluing and clamping to do my repair on the cabinet. My guess is that I spent almost that much time on the chassis by the time I got it ready to go. I really wouldn't have done that

unless I wanted it for my collection. I must say that it did come out pretty nice and you would never know that it was that bad. I am lucky that I have the time to do this and the skill to work on my own stuff.



The finished Zenith

As I look at my collection, there are ones that I could not afford to buy in the condition they are in. I am not afraid to get my hands dirty or do some hard work to make a radio look nice. The bad thing is that it takes so long that my labor rate is pretty low. It is a good thing that I like to do this. I do take a lot of pride in my radios and I think this is a great hobby. I have fixed up a lot of stuff in the last several years. Oh sure, it would be nice to find them all in good shape but the honest truth is there are some that are really pretty

bad. A lot of them can be saved if you are willing to put out an honest effort. I can feel good about that and passing them on to another collector.

It wasn't exactly the cheapest thing I had ever restored but I was satisfied with the end result. It did save another old radio because this one was in bad shape. It would have made a good parts radio and maybe if I hadn't got it, that would have been its fate. I hate to see another old radio destroyed just because someone needs some insignificant part. Over the years, I have found out that these are becoming more scarce all of the time. After all, the good ones will fall into the hands of the collectors and will be saved. The rough ones may be thrown away after they have been used for parts. I hope you have enjoyed hearing about my "New" Zenith.

A frequent contributor to the Bulletin, Bill Arnold has a small collection of radios but mostly fixes them to sell. Bill enjoys the electronic restoration work as well as the cosmetics. He is retired from Crane Naval Station where for thirty plus years he worked in electronics. .



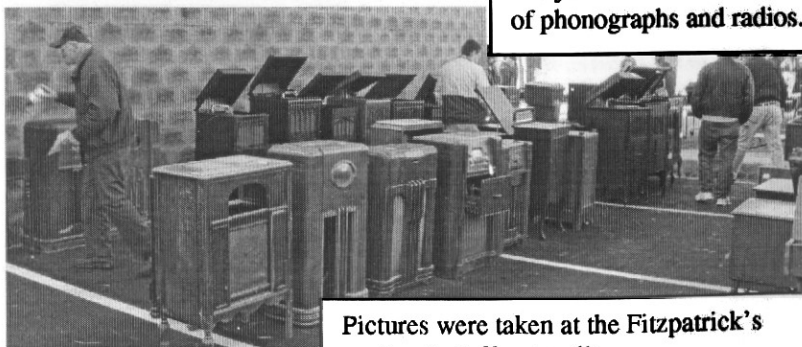
Leftovers!

Time for a Change for Gerald and Marjorie



Well known to radio and phonograph collectors throughout Indiana, Kentucky and surrounding states, IHRS members Gerald and Marjorie Fitzpatrick have decided it is time for change. They sold their building in Jeffersonville and in late October offered the contents to the highest bidder.

The couple says they will not disappear and we can plan on seeing them at future radio meets and local auctions. Sure enough, two weeks later, Gerald and Marjorie were seen at an auction of phonographs and radios.



Pictures were taken at the Fitzpatrick's auction in Jeffersonville.



Found: Someone left a nice pair of sunglasses (ladies I think) in the restroom next to my Zenith Room when they visited my radio collection on Saturday afternoon, August 12th. If they contact me and give me their address, I will be glad to send them their sunglasses. Ted Rogers, 6938 East Waco Drive, Syracuse, Indiana 46567 phone 574-457-8886 11/06

Wanted: I am putting together a radio collection of the RCA radios in which industrial designer John Vassos is attributed for cabinet design. The majority of these are the chrome framed consoles and tombstones from the 1936 era. Also, I am looking for the Vassos-designed RCA bakelite models from the 1939 era as well. Thank you for your help. Bob Snively, Richmond, IN Phone; (765) 935-3746 E-mail; totallytubular@aol.com 11/06

For Sale: 1932 Admiral 40L, Walnut, \$85.00; 1947 Admiral 7T10-C, \$35.00; 1932 Aetna, \$65.00; 1947 Airline 74BR1501B, \$75.00; 1946 Arvin 544A, \$55.00; 1935 American Bosch model 4, \$75.00; Balanced Amp, New, \$115.00; 1950 Crosley 10-135, White, \$115.00; 1950 Crosley 10-137, Chartreuse, \$115.00; 1950 Crosley 10-138, Maroon, \$100.00; 1950 Crosley 10-140, Green, \$110.00; 1934 Crosley 5M3, \$110.00; 1934 Crosley 515, 1935, \$95.00; 1946 Farnsworth ET-064, Black, \$75.00; 1948 Farnsworth GT-051, White, \$125.00; 1948 Firestone, 4-A-79, \$45.00; Jackson tester, wooden case, \$12.00; 1932 Kadette Jewel (400, \$185.00; 1932 Majestic, Walnut, \$65.00; 1927 Peerless Speaker, Mahogany, \$45.00; 1942 Philco 42-PT95 Walnut, \$50.00; 1930 Philco 20, Walnut, \$250.00; 1934 Philco 60, Walnut, \$150; 1931 Philco 70, Mahogany, \$350; 1931 Philco 90, Walnut, \$500.00; 1939 RCA 9TX31, Bakelite, \$65.00; 1924 RCA 103 tapestry speaker, \$175.00; 1927 Rolla Speaker, Mahogany, \$40.00; 1947 Sentinel 309-W, brown, \$45.00; 1932 Silvertone 1407, Walnut, \$195.00; 1932 Silvertone 1801, Walnut, \$85.00; 1949 Silvertone 9001, Brown, 65.00; 1925 Sonochorde Speaker, \$150.00; 1946 SkyRover 9022H, White, \$45.00; 1949 Zenith 7H920, Brown, \$45.00. All radios have been restored unless otherwise specified and are in nice condition. All items subject to prior sale and my inventory changes depending upon what I sell and what I find. If interested, contact Bill Arnold, Washington, In , 812-254-1702 or email bbarnold1@gmail.com (*note new email address) 06/06

RADIOADS (continued)

For Sale: Photocopies: Manuals for B&K E-200D Sig. Gen, Radiola III, IIIA, 17, 18,25, 60, 100, 100A & 103 and other paper, some original. LSASE or email for list. Herman Gross, 1705 Gordon Drive, Kokomo, IN 46902 765-459-8308 Email: w9itt@sbcglobal.net 11/06

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 # (574) 537-3747, e-mail dolivears@aol.com 06/06

Wanted: Original Output transformer or Output transformer with speaker for Zenith Radio Model 4-K-331 and volume control. Also original speaker and turntable for RCA Model 612-VS and the loop antenna. Please call Steve Kohut at (260)375-4334, leave a message if no answer or write at 2610 E. 1000 S., Warren, Indiana 46792 06/06

Interested in TV history? Want to see how it started? Try this Web site. www.televisionexperimenters.com You'll be amazed how far we've come. Pete Yanczer, 635 Bricken Place, Warson Woods, MO 63122-1613 11/06

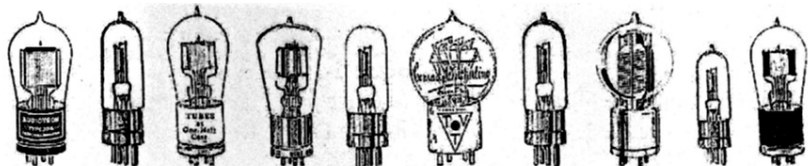


Write!

Radio ads - 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. Please, type all ads before

submitting them. If you cannot submit an electronic copy, we can scan in a typed copy.

Articles for publication. Radio history or restoration and repair of radio, your own radio collection; someone else's radio collection; your recent or memorable radio find; your experience at a radio event. Pictures are encouraged. We can scan good quality color or B&W prints. Sending jpeg pictures on CD-R works well. Please do not email high resolution pictures, your editor is on dial-up and the download time is extensive.



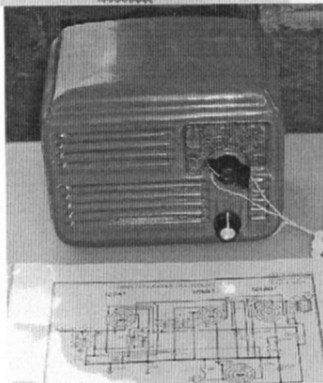
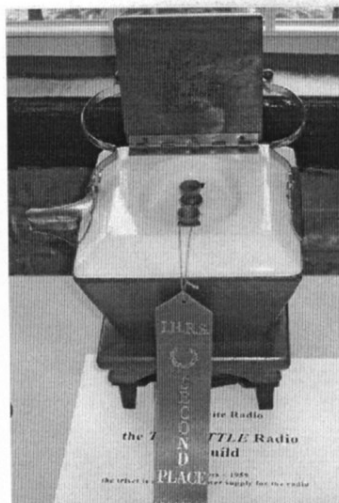
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Tube Collectors Association, Inc. PO Box 636,
Ashland, OR 97520.



**TUBE
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Some Contest Entries – IHRS Fall Foliage Meet in Greenfield – October 2006



Lamp Display at the Indiana Historic Radio Museum

