ARCI NEWS

www.antique-radios.org

THE ANTIQUE RADIO CLUB OF ILLINOIS

Affiliated AWA
Antique Wireless Association

Volume 42, Issue 1
February 2022

ARCI LIVE ONLINE VIDEO MEETS

BI-MONTHLY LIVE ONLINE MEETINGS CONTINUE
Generally, 3rd Saturday of the Scheduled Month

10AM – 12 NOON CENTRAL

THE AGENDA FOR EACH LIVE ON-LINE MEET IS ISSUED JUST BEFORE THE EVENT

Upcoming ARCI ONLINE MEET SCHEDULE

SATURDAY, MARCH 19, 2022 10AM CT
10:00 AM CT - NOON CT (Zoom Meeting opens 15 minutes before)
Watch your email for Registration Information

Saturday March 19, 2022 Saturday May 21, 2022
Saturday September 17, 2022 Saturday November, 2022

Online Meet Schedule can be found here
http://www.antique-radios.org/schedule.html

Upcoming ARCI IN-PERSON MEET SCHEDULE

SUNDAY, FEB 6, 2022	**7:30 AM**	**American Legion Hall Carol Stream, IL**

** Sunday April 24, 2022 - Carol Stream, IL ** (DATE CHANGE from April 3)
Sunday June 19, 2022 - Wheaton, IL - Dupage County Fairgrounds - guests of Six Meter Club
Friday August 5 & Saturday August 6, 2022 - Radiofest - Addison, IL Medinah Shriner Center
Sunday October 2, 2022 - Carol Stream
Sunday December 4, 2022 - Carol Stream

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THE ANTIQUE RADIO CLUB OF ILLINOIS

WELCOME TO ARCI

Visit ARCI on the WEB

Website: www.antique-radios.org

FaceBook: https://www.facebook.com/ARCI.org

YouTube:https://www.youtube.com/channel/UCEyMw9QGrvcquC1vZBvHWbQ

Join ARCI

http://www.antique-radios.org/membershipinfo.html

-or-

Use the application in this newsletter

Leadership

President	Tom Kleinschmidt
Vice President	Tom Zaczek
Treasurer	Rudy Hecker
Secretary	Jay Stewart
Membership	Elaine Hecker
Radiofest chair	Steve Muchow
Director on-line events	Matt Pollack
ARCI News editor	Maureen Blevins

Contact ARCI

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630-739-1060

ARCI News is published bi-monthly, February through December.
Antique Radio Club of Illinois is a registered non-profit in the state of Illinois.

PRESIDENT'S MESSAGE
February, 2022

This month I have updates on swap meet operation, the annual election, ARCI YouTube channel and more.

Swap Meets
Beginning with the February 6, 2022 indoor swap meet there are two improvements to serve you better.

First: the entire public accessible main floor at the American Legion Hall is open to us including the bar area. This opens more space to set up tables for sellers, more room for you to meet up and have conversations too. Donation sales are now in the bar area along with additional swap space for sellers. Tables will be preset before the meet for improved traffic flow.

Second: indoor meets will open at 7:30AM. The door WILL be locked until 7:30AM. Historically the swap meet started when the front door was unlocked. That time was substantially earlier than the advertised start time. Many participants that arrived at the advertised start time were disappointed that the event was well under way. The goal is to be fair and make the advertised start time match the real start time.

The April 2022 swap meet date has changed to Sunday April 24, 2022. The American Legion Post had a previous commitment on our original date that was missed when we made the original schedule. They asked if we would kindly move to the new date. It is our pleasure to accommodate their request as they are very generous in accommodating us.

Radiofest is scheduled for August 5 & 6, 2022. It remains subject to the state of Covid. We are also in desperate need for key volunteers; some have passed away while others are no longer able to help. More in Steve Muchow's update in this issue.

Election & business meeting
The election by voice vote retained Tom Zaczek, Rudy Hecker and me as officers. Long time Vice President Jim Novak has stepped down to focus on his official duties as President of the Six Meter Radio Club. Thank you Jim for your great service and continued support of ARCI. We welcome Jay Stewart as the new secretary. Jay wants to be more involved with ARCI and approached me about how he could help. He is also a hands-on guy with his radios - doing repair and restoration. Details on the business meeting in general and the election are written up separately in this issue.

Donations
Enquiries about repair and sales of radios by the general public continue to be strong. As a result, there continues to be a regular flow of donated items. Donation sales are the major funding source for the club.

ARCI on-line Meets and ARCI YouTube channel
Our ARCI online meets are still going strong. The format and quality created by Matt and Tom have become benchmarks for other clubs on-line meets.

The ARCI YouTube channel has the previous meets for you to enjoy: https://www.youtube.com/channel/UCEyMw9QGrvcquC1vZBvHWbQ. Creating YouTube videos is a very time-consuming process typically taking 10 hours of transcoding and 22 hours of video rendering. Dedicated hardware with the horsepower to process video is a must and not tie up personal hardware. The officers and board just authorized the purchase of a computer to do post production work on the recorded video processing.

Pencil in the next on-line meet 19 March at 10am. Details in Tom Zaczek's article or email: remote-events@antique-radios.org for more information.

That is all for now. Feel free to contact me at clubinfo@antique-radios.org

Tom Kleinschmidt

RENEWALS

DO YOU KNOW WHEN YOU WILL EXPIRE?

Or, more specifically, your ARCI Membership? The address label shows your expiration month. It takes time to process renewal requests, so please renew at least one month BEFORE the month indicated on the label. This also helps ensure that you will continue receiving your *ARCI NEWS* without interruption.

Look on page 52 of this newsletter for the renewal form.

ARCI Business Meeting Notes for December 5th, 2021

Notes taken by Rudy Hecker on behalf of Jay Stewart.

1. **Election of slate of officers as listed below by voice vote by attendees;**
   President – Tom Kleinschmidt
   Vice president - Tom Zaczek
   Treasurer – Rudy Hecker
   Secretary – Jay Stewart

   RESULTS: A verbal approval and show of hands verified the approval and the election of said offices.

2. **Treasurer's report – Rudy Hecker**
   RESULTS: The current club funds available for 2021 amounted to $29,747.37.

   Total club expenses for the year of 2021 amounted to $6,589.15

   A question was raised by one of the members regarding what requirements are needed to maintain the clubs NFP status in Illinois. The issue of how much funds were allowed to maintain the clubs NFP status.

   Rudy Hecker reported that the general requirement was that the club can have about twice as much funds as operating expenses for the year. Since the cost of running Radiofest was approximately $10,000 the last couple of years and this year's expenses totaled $6,589.15, the combination therefore totaled $16,589.15, which means we have met the requirement set forth by the state.

3. **Radiofest 2022 report – Tom Kleinschmidt for Steve Muchow**
   RESULTS: Steve Muchow and John Stone need volunteers. The auction team has lost key members that are no longer with us or able to do tasks and need a registration team, among others. We still have reservations with the Shriners; details such as cost remain to be worked out.

4. **New business**
   RESULTS: A member brought up the discussing of increasing the size of the Storage Locker, which is now a 7 x 10. We pay $1020.00 to maintain that locker for the year. To increase it to a 10 x 12 foot locker would cost us $1620.00 including protection. Tom mentioned that he believes the locker size is ok for now. If donations to the club increase, then the decision will be made to increase the size if necessary.

   A team is needed to update the ByLaws as the world has changed since they were created 40 years ago. A suggestion was accepted to add the ByLaws to the Web Site when revised.

ARCI UPDATE

A few photos from our **December 2021 SWAP MEET** which was held at the American Legion Hall on S. Gary Ave in Carol Stream, IL. *Photos by Daniel Schoo*

Attendance was up in December by both sellers and buyers. We had a great donation sale that yielded over $800. Expansion into the bar area now gives attendees access to the entire public portion of the main floor, and more room to spread out.


PHILCO
55 60 70 80 100 120 140 160


PHILCO
55 60 70 80 100 120 140 160

Here is a link to more photos on the club website. http://www.antique-radios.org/pictures.html

SWAP MEET Updates

1. **Indoor** swap meet **start time** is now **7:30 AM**. In the interest of fairness and accuracy **<u>doors will be locked until 7:30 AM</u>**. This starts with the 06 February 2022 swap meet.
2. **APRIL** swap meet **NEW DATE** is now **24 April 2022** at the American Legion hall. There is a conflict at the Legion Hall on the original date.
3. **More room!** We have expanded into the bar.
    a. The entire public area of the main floor at the Legion Hall is ours to use.
    b. Starting in February tables will be set up in a pattern to optimize traffic flow.
    c. Donation sale / auction items will be in the bar – no longer on the stage cluttering movement.

Next swap meet

Date: **Sunday, 06 February 2022**
Times: **Doors open at 7:30 AM, meet ends by 11:00 AM**
Location: **American Legion Post 76**
570 S Gary Ave
Carol Stream, IL 60188

RADIOFEST 2022 PLANNING UPDATE

By Steve Muchow, *RADIOFEST* Chair

Initial planning for *Radiofest 2022* continues, but it is tempered by the effects of the ongoing COVID-19 virus which are currently affecting just about every area of the worldwide workforce. I guess we knew that variants were a possibility, but understandably, preferred to suppress the thought. I'm mentioning this just so we understand that it may be some time before we are to experience "normal" *Radiofest* activities without restrictions. We continue to plan, but time will tell if there may be restrictions or other factors imposed that might influence *Radiofest 2022*. At this point, we are optimistically moving forward with the plans described below.

We are planning to again host *Radiofest 2022* at the Medinah Shriners Facility in Addison, Illinois with the adjacent Hilton Garden Inn providing overnight accommodations. The Medinah Shriners is located at the junction of I-355 and Army Trail Road in Addison, Illinois. This is a very convenient location that can be accessed from all directions within the entire Chicago area. The Hotel has agreed to provide a discounted room block rate for attendees. This discounted rate along with reservation details will be announced in a future issue of ARCI NEWS and on the ARCI Website. The preliminary plan is to offer the same great activities that *Radiofest* is known for. This includes the world-class Friday Night Auction followed on Saturday by the large outdoor swap meet and donation auction. Additional Saturday activities typically include speaker programs, the popular ARCI outdoor ham station and an evening dinner/banquet. This format tends to offer something for everyone and has proven to be popular with *Radiofest* attendees. Again, this is preliminary and details will evolve over time.

Clearly, there are many elements involved in hosting a successful *Radiofest*. It is the enthusiasm and dedication of the many volunteers that continues to make this world-class event possible. Thank you to all of the volunteers that have helped over the years and we hope that you will, again, be willing to assist this year. Please let me know if you would consider being a part of the *Radiofest* Team. Contact me at smuchow@att.net with questions or comments.

Watch future issues of ARCI NEWS, the ARCI Website and E-mail blasts for future information on *Radiofest 2022*!

RADIOFEST 2022

Friday August 5 – Saturday August 6

Medinah Shriners
550 N. Shriners Drive
Addison, IL 60101

ARCI ONLINE ZONE
By Tom Zaczek

ARCI Online Meet #19

SATURDAY, March 19, 2022 10 AM CT

Join in on your computer, pad or phone to be a part of our online video Meetings
You don't need to be an ARCI member!

Stay tuned to the emails from ARCI for the registration link for this meeting. After registering, you will receive a confirmation email containing the link required to join the meeting

IMPORTANT - You need to receive the confirmation email back because this link gets you into the meeting when the time comes. So, if you don't receive the confirmation email it could be that it is in your spam folder.

Reminder: ARCI is now on YouTube. All the prior Online Meets (through November 2021) are available for viewing. You can find the channel here: https://www.youtube.com/channel/UCEyMw9QGrvcquC1vZBvHWbQ

Check it out! Each video has a "table of contents" (where it says SHOW MORE) beneath the main video window that you can click on and go directly to that topic or presentation, so it's easy to watch just one specific presentation. Visit ARCI's YouTube channel where you can click the free "subscribe" button and get notified when a new video comes out.

AGENDA (may be revised without notice)
9:45 AM – OPTIONAL PRE-MEETING – Time to get logged-in and troubleshoot any access issues.

10:00 AM – Meeting Agenda

- Introduction – *Tom Zaczek*
- We're on YouTube – *Matt Pollack*
- PRESENTATIONS: All of the presentations have not been lined up yet for this meet, but this section is where we have several 15-to-25-minute presentations of interest in the areas of radio restoration, company history, and technology, just to name a few.
- SHOW & TELL, TIPS & TECHNIQUES: 1-to-3-minute informal presentation of something you'd like to share with the meeting … Join in and spend a few minutes to show your item, a helpful tip, radio restoration technique, or how you solved a tough restoration problem

- ARCI SWAP MEETS- An update on the upcoming swap meet and the one we just held

- ITEMS WANTED----ITEMS FOR SALE

    - If you want to offer something for sale OR see if others have what you're looking for, please use this time to discuss it.

- OPEN SESSION: Non-moderated chat session as time permits

12:00 PM – Close

Planned ARCI live on-line video meets

We are changing the frequency of our meetings! When we started up, back in the summer of 2020, there was a whole lot of pandemic and social distancing going on, and few other radio club activities to take up our time on weekends. We held these meetings once per month. What we found out this summer is that we now have more events competing for our precious weekend time as the pandemic has waned. We are going to take the summer off in 2022. Also, in those months where ARCI has an "in person" swap meet, we are not scheduling a video meet.

Here is the on-line schedule for 2022: (Meetings start at 10 am CST)

March 19th	May 21st	September 17th	November 19th

Be a presenter!

We have seen so many great presentations this past year by folks that *never* made a presentation before! You can do this! The On-Line meeting team can help you with learning how to make a Power-Point presentation, or prepare some simple photo slides. We can help you dry-run it on Zoom. It's easy!

Share your project and passion with a 10-minute or longer presentation. Send an email to remote-events@antique-radios.org with your topic. Photos help too.

Become a member of ARCI!

These meets are open to everyone interested in antique radio. You do not need to be a member of ARCI. If you like these meets, your support of the organization is truly appreciated. Please consider joining. Your membership dues help support the club's activities. Please click either of these links for the membership form:

Antique Radio Club of Illinois (antique-radios.org) or
http://www.antique-radios.org/membershipinfo.html

I look forward to the upcoming meetings and hope you all get a chance to attend. I encourage you to be a presenter to share your experiences, knowledge, and passions about these old radios!

The ARCI On-Line Meeting Team: Tom Kleinschmidt, Bill Cohn, Matt Pollack and myself are the ARCI On-Line Meeting Team and can be reached via email at remote-events@antiqueradios.org

RADIO ZONE
A Column on Radio Related Items of Interest

Baseball, Broadcasting, & Compact Cars: Forgotten Mr. Crosley

by Gary Hoover

Over the last two years or so, we, in conjunction with the Archbridge Institute have produced a series of "long-form" biographies of great entrepreneurs. Each of these runs five to seven thousand words and takes twenty to thirty minutes to read. In this week's newsletter, we're testing something different – a "bullet biography" which will only take a couple of minutes of your time. Pictures are below the story.

Ed. Note: *Some pictures from the original have been excluded here due to space constraints. To see the original article in its entirety, please click the link at the end of this story.*

When I recently told a friend the story of Powel Crosley, Jr, she said, "Why haven't I heard of this guy?" To which the answer is, "There are tens of thousands of entrepreneurial men and women we've never heard of, who shaped our lives." Check out the life of my "old friend," the incredibly innovative Powel Crosley:

- Born in 1886 to a successful Cincinnati lawyer and his wife
- Is followed by three siblings, including younger brother Lewis who helps carry out Powel's dreams for their entire working lives
- Tinkers with automobiles at an early age, dreams of being a race car driver and an automaker
- Drops out of college after dabbling in law and engineering
- Sells cars and works for automakers in Indiana to learn the business
- "Almost" drives a race car in the Indianapolis 500
- Prospers in the auto accessory business, selling "add-ons" that did not come with the car
- Age 34, 1921: wants to buy a toy radio for his son, but finds they cost $100 ($1500 today); buys a twenty-five-cent book about radio instead
- He and son build their own radio, then he hires university-trained engineers to design a cheap radio
- By the end of 1921, the Crosley "Harko" radio is offered to the public for $7
- By 1925, radio takes off and Crosley is one of the world's largest radio makers, possibly #1
- Powel and his brother become wealthy; Powel owns fishing islands, hunting

preserves, and mansions in Ohio and Florida

- Realizing that having a radio station would help sell radios, the Crosleys launch WLW radio station in Cincinnati, at first 500 watts of broadcast power, then 1000, 5,000, 10,000; Crosley also does early television experiments
- WLW reaches 50,000 watts, one of the relatively few "clear channel" stations in the nation
- WLW reaches much of the Eastern United States, develops unique programming like Ma Perkins and overnight music show, Moon River; nicknamed "the Nation's Station"
- In 1934, WLW technicians boost power to 500,000 watts, the most powerful station in the world; can be heard in South America and Europe
- Also in 1934, seeking more content for WLW, Powel buys the Cincinnati Reds baseball team, which was broke and about to leave Cincinnati, leads the way in live sports broadcasts
- In 1935, Reds have the first night-time baseball game, under the lights and on the radio from Crosley Field; game attendance then booms and other teams adopt night games and radio broadcasts
- After five years, in 1939, pressure from smaller stations leads FDR and federal government to make WLW come back down to 50,000 watts
- Throughout the 1930s, Crosley's company adds other appliances; invents and patents the "Shelvador" – the first refrigerator with shelves inside the door
- Crosley dabbles in making airplanes, without success
- At the 1939 Indianapolis 500, his company launches the Crosley car, the first real compact car (top speed 50 mph, 50 miles per gallon fuel efficiency, 80-inch wheelbase, and 39-cubic-inch engine); 5,700 are sold by the onset of WW II
- In World War II, Crosley becomes a major defense supplier, making 150,000 radio sets, bomb fuzes, military vehicles, and many other key items
- During the war, the government uses Crosley technology to broadcast our messages to Europe from Cincinnati; just before the atom bomb is dropped on Hiroshima, government prepares to ship WLW's 500,000-watt transmitter to Asia, but it is not needed
- In 1945, fifty-eight year old Crosley is bored with radio and sells his station and appliance businesses to Avco Corporation, former owner of American Airlines
- But he believes in his economical little car; his new 1946 "CC" model sells for $850 ($11,300 today)
- Crosley Motors is the first American car company to use disc brakes on all models
- In 1948, Crosley sells almost 25,000 cars
- As General Motors, Ford, and Chrysler clinch their domination of the US auto industry, Crosley gives up in 1952 after selling about 84,000 cars (now collectors' items). Owners now or then include Humphrey Bogart, Gloria Swanson, Frank Lloyd Wright, Nelson Rockefeller, and Boy George.
- Powel Crosley, Jr., dies in 1961 at the age of seventy-four

There is a lot more flesh and detail available on this fascinating story, most easily found in the biography [Crosley: Two Brothers and a Business Empire that Transformed the Nation, by Rusty McClure, David Stern, and Michael Banks.]

If you like this story of an unsung innovator, we have a few thousand more on our to-do list!

- Gary Hoover

Originally published on April 24, 2020 at https://americanbusinesshistory.org/baseball-broadcasting-compact-cars-forgotten-mr-crosley/.

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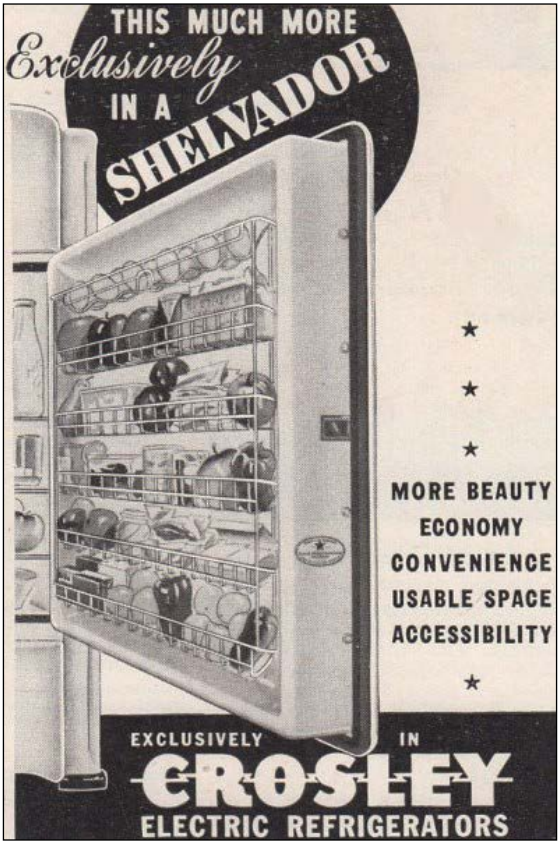


HARKO RADIO RECEIVER

No batteries, tubes, etc., required. Hook it to your aerial and phones. It will tune from two hundred to six hundred meters, bringing in spark, voice and music, with an average amateur aerial.

Complete with battery and interrupter for crystal testing, crystal, etc. Price $9.00. Phones

CAPITOL THEATRE
Jazz Unit Broadcasting
at the W L W Station

WLW

360-Metre
Wave Length

RADIO *Entertainment*

Cincinnati's Great Radio Broadcasting Station

Erected and Located at the

CROSLEY MANUFACTURING CO.

RADIO DIVISION

STATION W L W — 360-METRE WAVE

inaugurates a Regular Broadcasting Program Schedule of

NEWS — LECTURES
INFORMATION
MUSIC
And All Forms of Audible Entertainment

TO-MORROW, MARCH 23rd
(THURSDAY NIGHT), Beginning at 7:15

FEATURING:
An Address By His Honor GEO. P. CARREL
Mayor of Cincinnati
The CAPITOL THEATER JAZZ UNIT
and Prominent Local Soloists and
Famous Pianists Through the DUO-ART Reproducing Piano

This concert will be unique in the musical history of Cincinnati. Radio experts estimate that over 10,000 receiving stations within the range of this new and powerful broadcasting station will be tuned to catch or direct-hook to, one, the music and the address of Cincinnati's Mayor. With an average of three people listening at each receiver station, to-morrow night's audience will total 30,000.

Hear this concert on your own receiving set, or go to the home of some friend; or you can come to Government square and hear it come in over the Crosley Radio Receiving Set at the

MILNOR ELECTRIC CO.

129 Government Square

Huge amplifiers will magnify the music and talk to such proportions that the entertainment will be heard at any place on Government Square.

You can install a wireless receiving set in your home. No technical knowledge of radio or electricity is necessary to set up and operate a wireless plant.

Come and see how simple it all is.

Prepare for this concert and other entertainments to be broadcasted from this officially recognized station.

MILNOR ELECTRIC CO. RADIO SUPPLIES

Wireless Receiving Stations Are Easily Installed

The entertainment and pleasure from them is inexhaustible and is rapidly growing in scope and character.

No Technical Knowledge Needed

Anybody Can Set One Up in a Few Hours

Crosley Harko Receiving Set

At Milnor's $19.00

Crosley Harko Senior Receiving Set

At Milnor's $24.00

Crosley Two-Stage Amplifiers

At Milnor's $25.00

Complete Radio Parts

Crosley V-T Sockets — 25c

Crosley Rheostats — 60c

Drop in and get this catalog. Free

U. S. Licensed BROADCASTING STATION W L W

Operating on 360-metre wave length

This new station extends to all radio enthusiasts and radio operators the news and entertainment service, which through an operation extended over a year, through the use of a source of discussion and information to the entire Middle West.

This station is one of the most powerful in the country with a carrying power that enables it to be heard as far West as the Rocky Mountains, south to the Atlantic Ocean, north, Eastern Canada, and as far south as the Gulf of Mexico.

It has been built by and is owned in the plant of the Crosley Manufacturing Company, manufacturers of Harko Radio Receiving Sets and Otica Spectacles, Northside, and who are among one of the largest radio manufacturing firms in the country.

The station is officially recognized by the United States Government, and as such broadcasts the news, sport events, lectures, information, music and other entertainment, operating as a service FREE to all who may care to listen.

A regular program schedule is to be followed — announcement of which will appear in the Radio Pages of the daily papers.

A WORD TO RADIO FANS

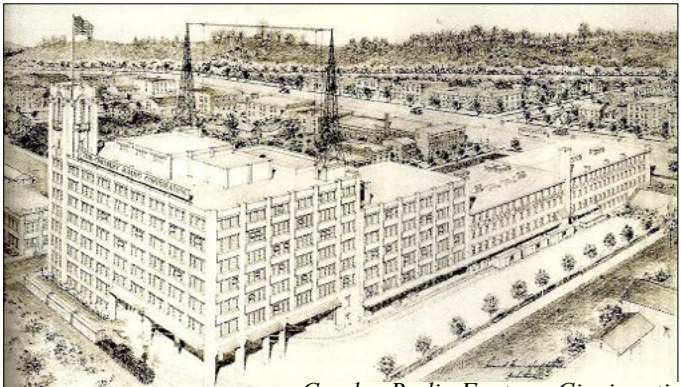
Interest will be keen to hear how far this concert will be heard. For this purpose, all who hear the concert and will notify by postal or by letter, either this station or The Cincinnati Enquirer.

PROGRAM

W L W Radio Station, Thursday Eve., March 23rd, at 7:15

Miss Rose Boden, Soprano
Mr. Oscar Coburn, Tenor
Miss Virginia Coburn, Accompanist

1. Etude de Concert ..... Sternberg
   Played by Joel Hallaman
   Through the medium of the Duo-Art Piano. Mr. Hallaman's phenomenal accomplishment was so vividly recognized, contributing more than any other single feature to the success and the popularity of Hallaman Band-Land.
2. Cincinnati Enquirer Topics
3. Vieni d' Amore ..... Pinsuti
   Miss Rose Boden
4. Prelude C-Minor ..... Rachmaninoff
   Played by Mr. Oscar Calvelbrinch
   Duo-Art Piano Reproduction
5. Recording for phonograph ..... Pinsuti
   Mr. Oscar Coburn
6. Greetings to the Middle West and All Cities Within Radius of This Station
   Mrs. Geo. P. Carrel
7. The Capitol Theater Jazz Unit — Capitol Theater Twenty Minutes of Syncopated Melody
8. Late News Bulletins
9. a. Pale Moon ..... Logan
   b. An Evening ..... Cadman
   Miss Boden
10. Viennese Waltz ..... Gaertner
    Played by Ignaz Friedman
    Duo-Art Piano Reproduction
11. a. The Great Awakening ..... Kramer
    b. Come With Me in the Summer Night ..... Vandersteen
    Mr. Coburn
12. Minuet ..... Paderewski
    Played by Mr. Paderewski
    Duo-Art Piano Reproduction



Crosley Radio Factory, Cincinnati

Airline Movie Dial Radios

by Tom Kleinschmidt

Radio was a mature technology by the middle 1930s. The pioneer days of broadcast radio in the 1920s were long over. It was the time to get a radio in every home and more than one if possible. Following the marketing maxim that you can't sell technology for technology's sake; price, size, features, benefits, and styling are what sold radios. Every brand manager needed a differentiator, be it a solid feature or a gimmick, it did not matter. A key feature for Montgomery Ward was the movie dial.

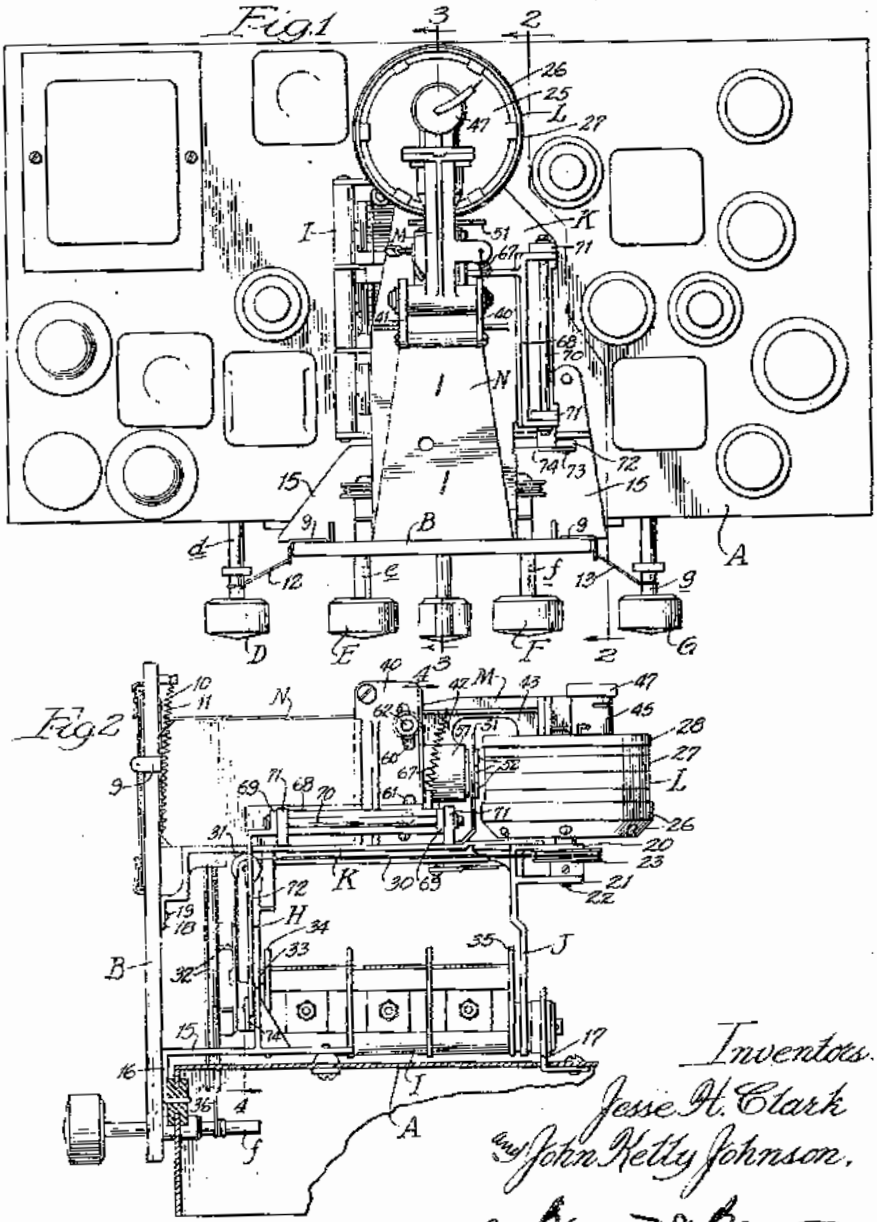
Based on their catalog listings, Montgomery Ward exclusively sold movie dial radios under the Airline brand from 1936 to 1938. Wells Gardner made the radios for Wards and held the patents[12] on the movie dial system.

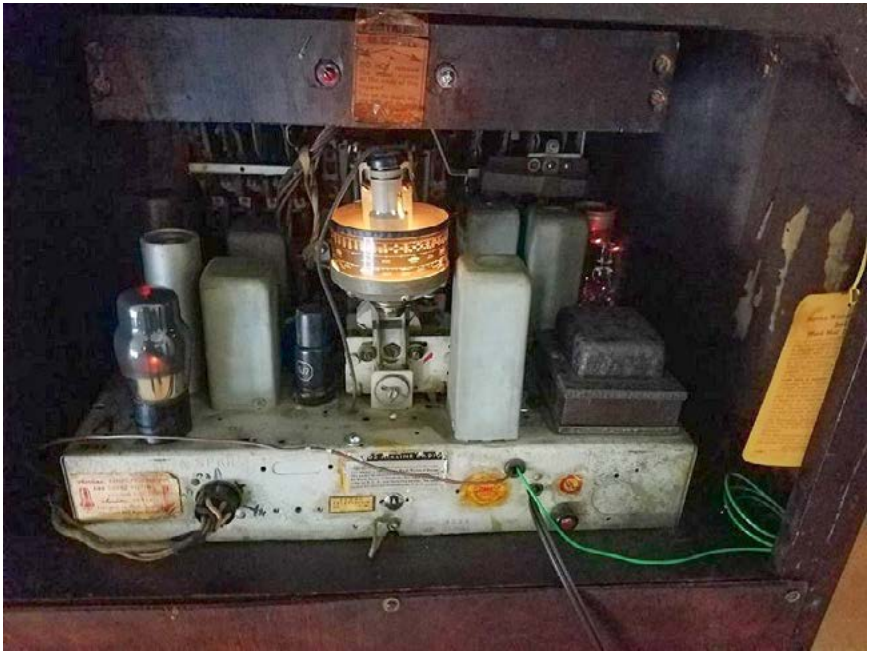
The movie dial system projects the station call letters and dial scale onto the back side of a frosted plastic screen. The movie connection comes into play as the source of the images is a ring of 35mm film that rotates as the radio is tuned. There is also a light source, lens, shroud, and other elements between the film and screen. The Rider[10] service manuals and patents have detailed descriptions on its operation and adjustment.

March 29, 1938. J. H. CLARK ET AL 2,112,734

TUNING DIAL FOR RADIO RECEIVING SETS

Filed Sept. 27, 1937 2 Sheets-Sheet 1





Some forty or more models of movie dial radios were made over their three-year run. Like the General Motors notion of “a car for every purse and purpose”, the movie dial sets came in seven to thirteen tube models, with eight, nine, ten and eleven tube sets rounding out the portfolio. Often the eight tube sets were the seven tube sets with the addition of a tuning eye. No Chevrolet equivalents though, as there are no five tube sets. Features on various models included: optional wired remote control, telephone dial tuning, multiple speakers, and motorized tuning via preset push buttons. The Wells Gardner Series FLL chassis used on many seven and eight tube movie dial models are chrome plated, a mark of quality made famous by high end makers like E. H. Scott and McMurdo Silver.

Rural sets were mostly six Volt with vibrator power supplies as used in car radios. Gas generators and wind generators were sold by Wards to charge the battery. There was a series of three battery sets made too, using 2 Volt, 10.5 Volt, 135 Volt batteries with a choice of wet or dry 2 Volt filament battery. The AC sets have power transformers. Typical AC sets are rated at 117 VAC, 60 cycles. Some were available with AC options ranging from 105 VAC to 235 VAC and 25 cycles. There is no evidence of series filament versions.

The following photo is the Airline movie dial console model 62-309. It has nine tubes with presets and motor tuning[15]. The movie theme is carried one step further on this model as the decorative metal plate surrounding the dial and push buttons mimics theater marquee ornamentation.

Model 62-309

Many features on radios and other products have longevity and others don't. Long term, things that truly improve a radio such as automatic volume control and push button tuning in vehicles are still in place. The elements of movie dial projection live on in vehicle radio LCD screens where frequency, station call letters and current programming are all displayed. The companion article that follows takes a deeper dive into Movie dial radio models from a technical viewpoint.

Movie Dial Radio Models

By Tom Kleinschmidt

Identification and correlation of Movie dial radio models requires an understanding of Montgomery Ward and Wells Gardner numbering methods and schematics. Using some obvious and some not so obvious methods, correlation between the two companies was achieved for many of the radios. First off is a discussion of the product numbering schemes, then the results of the investigation.

Montgomery Ward Airline

The model numbers Montgomery Ward used at the time of the Airline movie dial radios are of the form: 62-NNN. Where 62 is the radio product category and NNN is the unique model of the radio. There are unique prefix numbers for each product category in the Wards catalogs. Using an on-line Montgomery Wards 1941 Fall *Auto, Tool and Farm catalog* as a numbering scheme validation tool the category numbers used there are:

60 Sporting goods
61 Tools & hardware
64 Tires
75 Paint
83 Electric Motors
86 Ladders
87 Farm Equipment
84 Lawn, garden & pocketknives

Wards Airline product numbers - radios, accessories, and parts - of the era all start with the 62 prefix. Early on in this research it looked as if the 62 prefix meant Wells Gardner, as W. G. was such a huge maker of Airline radios at the time. Some Wards sets were made by Belmont Radio and likely others too, along with things like ariels and spare bulbs. The model number on the set label and the catalog number correlate directly, albeit with some additions in the catalog numbering scheme.

The Wards catalog order number has the radio model number embedded in it - examples:

1. catalog number 162 C 412 is radio model 62-412
2. catalog number P162 A 267 is radio model 62-267

Example catalog numbers for parts and accessories also contain the 62 prefix:

1. catalog number 62C 7007 is an aerial
2. catalog number 62C 55196 is a spare bulb for the movie dial

As an aside, just after the 1936-1938 movie dial era, Wards introduced a new model number format that is a boon to radio collectors. The format is YY-LL-NNNN where YY is the model year with its ones and tens digits reversed, LL is the initials of the manufacturer and NNNN is the unique model number. Examples:

1. 93BR-714B is: 1939 model year, made by Belmont Radio, radio unique model identifier is 417B
2. 04WG-1108A is: 1940, Wells Gardner, model 1108A. Interestingly, the catalog number for this set retained the form of P162C 1108. The A and no suffix versions can be found on-line.

Model suffixes:

1. The A and B suffix in the examples above look to be product change tracking. For example, the 62-417A and 62-417B models look the same in photographs.
2. The only case of a movie dial E suffix is found on models 62-270 & 62-270E. They appear in the Rider schematic page Mont.-Ward 14-96. The significance of the E may be telephone dial tuning shown as an option on the schematic. The 62-270 is a manual tune movie dial radio. No other information was found on the E model as of this writing.
3. Movie dial models 62-308 and 62-308X 14 are the same set except the X suffix model is equipped with a 25 cycle (HZ) A power transformer. The X suffix is used on multiple models for the same purpose.

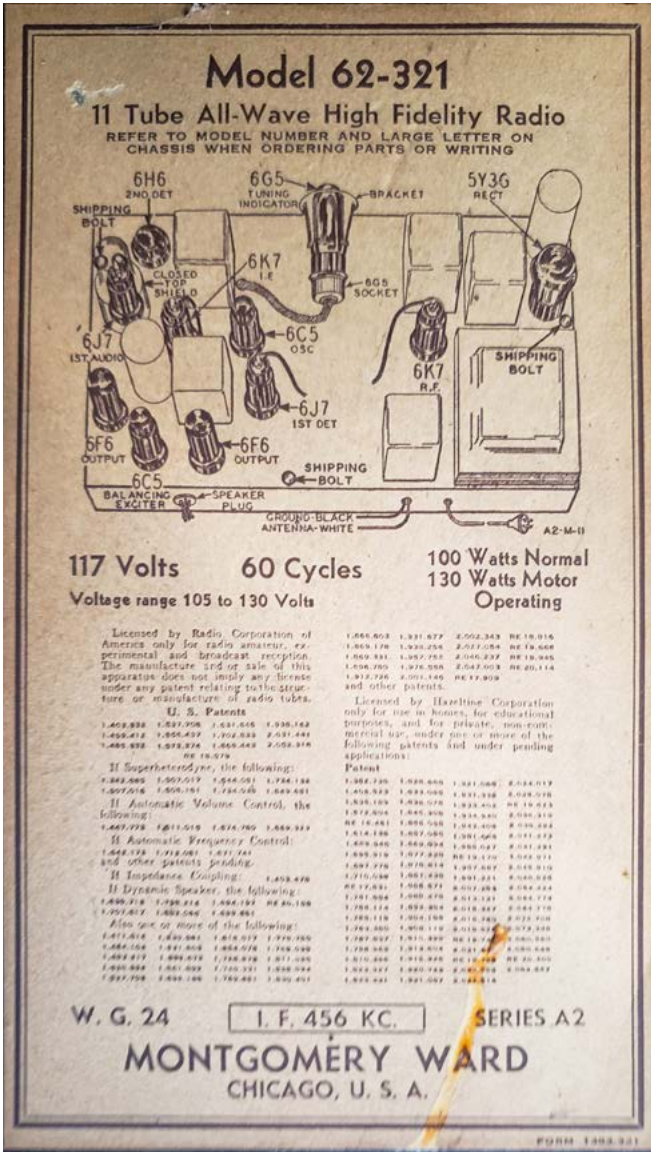
Wells Gardner

Wells Gardner uses a system of letters and or numbers for their radio *series*. The designation *series* is the chassis number when used in client radios that have multiple configurations. The series number is the model and chassis number for a singular client cabinet model and when marketed under the Wells Gardner name. An example is the Wards 62-197 16 tube set (non-movie dial). It was sold under the Wells Gardner name and LaFrance[B] brand as a Series 6F. The label in the Airline cabinet shows just 62-197.

W.G.24 is often on paper labels, metal labels and even in print. W.G.24 is associated with the licensing notice from RCA, Hazeltine, et al with their patent numbers. W.G.24 is often confused for the Wells Gardner series number when it appears on a standalone license label not associated with the radio model number and details such as tube layout. Therefore, it is logical that W.G.24 is the licensing information independent of presentation. The example below is a metal license

label from a circa 1930 Kimball model 60637 Cathedral made by Wells Gardner from their series 60 63. W.G. 24 is on lower left.

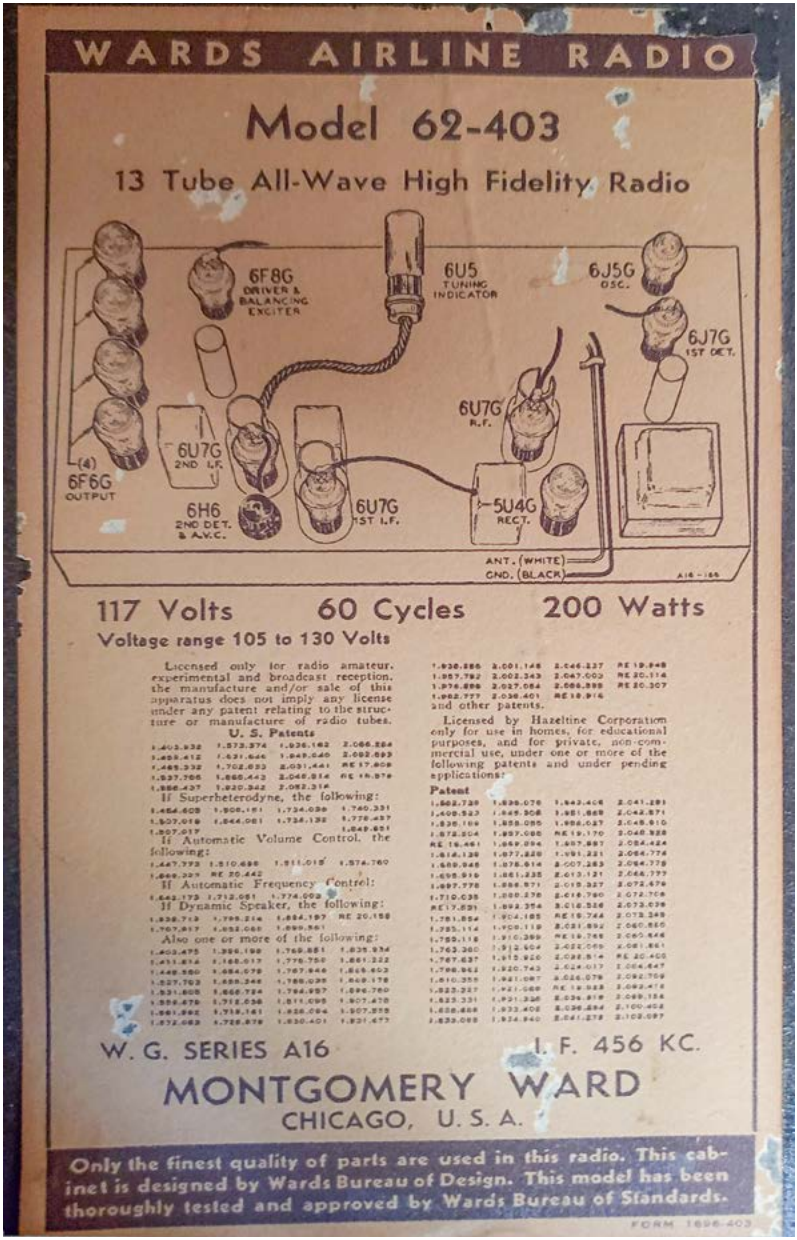
Correlating Airline models to Wells Gardner series



Step one was to make a list of movie dial radio models. This was done searching www.radiomuseum.org – one publisher had a long list of movie dial sets in his listings - with publications listed in *references* below and Greg Van Beek's kind help. The subsequent list was vetted against Riders and on-line photos. Some sets are mis-identified both as movie dials and as not being movie dials in various publications. That is not to criticize the authors, as errors have been caught in this process and some have surely remained.

While digging into the various models of movie dial sets, the labels in the cabinets revealed their Wells Gardner series. Curiosity drove the process to correlate Wells Series to the many Airline models. There were a variety of methods used to match up Wards to Wells:

1. Look at physical set labels – only a few available in a timely manner



2. Look up all models on-line
   a. www.radiomusuem.org – some had WG series listed that were later verified by schematic comparison, while others had pictures of their cabinet labels
   b. Antique radio forums that listed specific period publications
3. Rider Mont.-Ward schematics sometimes have the WG series number

in small print on the lower left below the schematic. Rider used the manufacturers schematic as provided with their own augmentations. This was a welcome surprise found well into the process.

4. When no Wells Series numbers were available, Rider Mont.-Ward schematics were compared to Rider Wells-Gard schematics. Often the Wards schematic and its Wells schematic were in different Rider volumes.

The research resulted in a big spreadsheet of information. The chart below is the essence of those findings.

Wells Gardner series	Airline Model number	Dial	Cabinet	Tube count	Input power
2DL	62-293	Movie	console	13	AC
2DL	62-413	Movie	console	13	AC
7LL	62-226	Round	table	8	AC
7LL	62-228	Round	Table	8	AC
7LL	62-308	Movie	console	8	AC
7LL	62-308X	Movie	console	8	AC 25HZ
7LL	62-318	Movie	table	8	AC
7LL	62-318X	Movie	table	8	AC 25HZ
7LL	62-408	Movie	Console	8	AC
7LL	62-408X	Movie	console	8	AC 25HZ
7LL	62-418	Movie	table	8	AC
7LL	62-418X	Movie	table	8	AC 25HZ
7P	62-332	Movie	console	7	32 VDC
7P	62-432	Movie	console	7	32 VDC
7Q	62-273	Movie	console	8	6 VDC
7Q	62-283	Movie	table	8	6VDC
7Q	62-327	Movie	console	7	6 VDC
7Q	62-337	Movie	table	7	6 VDC
7Q	62-427	Movie	console	7	6 VDC
7Q	62-437	Movie	table	7	6 VDC
A2	62-321	Movie	Console	11	AC
A2	62-451	Movie	console	11	AC
A3	62-303	Movie	console	13	AC
A3	62-433	Movie	console	13	AC
A4	62-347	?	?	7	AC
A4	62-417	Movie	console	7	AC
A4	62-447	?	?	7	AC

A5	**62-309**	Movie	console	9	AC
A5	**62-449**	Movie	console	9	AC
A7	**62-270**	Movie	table	9	AC
A7	**62-270E**	Movie	?	9	AC
A16	**62-403**	Movie	console	13	AC
OEL	**62-261**	Movie	console	11	AC
OEL	**62-311**	Movie	console	11	AC
OEL	**62-411**	Movie	console	11	AC
OF	**62-310**	Movie	console	10	Multi battery
OF	**62-410**	Movie	console	10	Multi battery
OF	**62-412**	Movie	console	10	Multi battery
2	**62-267**	Movie	console	7	AC
2	**62-277**	Movie	table	7	AC
5	**62-331**	Movie	console	11	6 VDC
5	**62-441**	Movie	console	11	6 VDC
6	**62-313**	Movie	console	13	AC
6	**62-314**	?	?	13	AC
7	**62-271**	Movie	console	11	AC

Circled numbers are common chassis sets and unknown Wells series numbers

As the chart shows, 12 identified Wells Gardner series made 36 Airline models. This is smart engineering and manufacturing as peripheral changes to a common series make multiple models. That strategy is commonly used across many industries then and now; it keeps cost, complication, and cycle time down.

The same series radios were sold to other firms such as Western Auto as a Truetone brand and within the Airline brand the same chassis was used for a movie dial and a round dial table radio. Below are pictures of an Airline 62-418[15] movie dial and a tired 62-226[15] round dial. These Airline models and a Truetone model used the Wells Gardner FLL series chassis.

These Airline 62-418 and 62-226 (pictured, next page) are the same cabinet with different dials and grill variations, another smart business decision. Wells Gardener made private label radios for retailers as their primary business. Cabinets and chassis were reused across models within product lines and across product lines.

This is still a work in progress as evidenced by the chart. Primary data from Montgomery Ward catalogs and physical radios was used when available. Next best information came from in-period documents from John F. Rider and Hugo Gernsback. Hard proof of details has not always been found. In those

62-418

62-226

cases statements have been made with qualifying words such as *it appears*. In all cases when using this information, *Trust but verify* to borrow the quote from Ronald Regan (who borrowed it from the Russian proverb). The objective is to understand product and company history as best we can by *looking through the rearview mirror*.

Notes

A. HZ is the abbreviation for German Physicist Henrich Hertz name. The term HZ is standard nomenclature today for frequency. Pre 1960 frequency nomenclature were called cycles. The unit of measure for frequency is cycles per second. https://en.wikipedia.org/wiki/Hertz

The northeast of the US and the east of Canada had 25 HZ AC power back then vs. 60 HZ AC power provided now. A 25 HZ set will work just fine on 60HZ but not the other way around. 25 HZ transformers require more iron and copper than 60HZ ones making them larger, heavier, and more expensive: hence an option.

B. LaFrance is the radio brand of The Fair discount department stores based in Chicago.

C. Montgomery Ward, Wards and Airline are used interchangeably in relation to radio products.

References

1. Book: Machine Age to Jet Age III, Mark V. Stein, 1999
2. Book: The Complete Price Guide to Antique Radios: Prewar Consoles, Mark V. Stein, 2000
3. Book: The Radio Collectors Directory and Price Guide 1921-1965, Robert E. Grinder, Second Edition, 1995, ISBN 1-886606-06-
4. Book: Guide To Old Radios: Pointers, Pictures and Prices, David and Betty Johnson, Second Edition, 1995, ISBN 0-87069-740-4 (pb) (None listed in First Edition)
5. Book: Collector's Guide to Antique Radios - Sixth Edition, John Slusser, 2005
6. Book: Collector's Guide to Antique Radios - Fifth Edition, John Slusser, 2001
7. Book: Collector's Guide to Antique Radios - Fourth Edition, Marty & Sue Bunis, 1997
8. Book: Collector's Guide to Antique Radios - Third Edition, Marty & Sue Bunis, 1995
9. Book: Collector's Guide to Antique Radios - Second Edition, Marty & Sue Bunis, 1992
10. Service Literature: John F. Rider Perpetual Troubleshooters Manual Volumes: VII, IX, X, XII, XIV, Mont.-Wards and Wells-Gard sections
11. Service Literature: Gernsback Official Radio Service Manual Vol 7
12. US Patents assigned to Wells Gardner: 2072854, 2081638, 2112734, 2112743, 2128734, 2242768
13. Website: www.radiomuseum.org
14. Montgomery Ward & Co. catalog: Fall/Winter 1936/37, No.125, page 383 A
15. Pictures: Airline 62-309, 62-418 movie dial - Greg Van Beek collection, 62-226 round dial - author's collection

Explore the world of tube-type electronics by restoring this domestic 1950's AM/FM broadcast receiver: the Zenith G725.

Restoration of a Vintage Zenith G725 AM/FM Receiver

This article — a continuation of the series on the restoration of broadcast receivers — details the restoration of the Zenith G725: an AM/FM receiver introduced in 1950 (see **Figure 1**). This radio makes a great first tube project because the plum Bakelite case is easily restored, the radio is affordable ($25 and up on eBay), and documentation is readily available. We'll cover the restoration of Bakelite, replacing decomposed rubber insulators, updating a selenium-based power supply, measuring components in circuit, and recapping capacitors that are no longer produced. If you want to know more about domestic broadcast receivers, then check out the restoration of the Zenith H845/C845 (*Nuts & Volts* Issue-1 2020). For now, let's jump into the specifics of the Zenith G725.

Zenith G725

The Zenith G725 was produced by Zenith Radio Corporation in Chicago, IL starting in 1950. The lunch kit sized radio measures 15x9x8 inches and weighs 9 lb 10 oz. The seven-tube receiver covers the domestic AM band (535-1605 kHz) and the US FM band (88-108 MHz). The Bakelite receiver has a forward-facing 7.5 inch moving coil speaker and an audio output of about 1.5 watts.

The seven-tube receiver follows the typical superheterodyne architectures for broadcast AM shown in **Figure 2**. In the AM mode, the broadcast signal from the antenna is amplified and then mixed with the signal from the local oscillator. The standard 455 kHz intermediate frequency signal is selectively amplified, converted to audio by an AM detector (demodulated), and then amplified. There is no tuning indicator, but there is a small ON-OFF indicator light above the volume control. The tubes, their function(s) in AM and FM, and their least expensive **TubeDepot.com** price at the time of printing are listed in **Table 1**.

Refurbishing the Zenith G725 requires a detailed schematic as well as specific tuning instructions. You can download a free PDF of the full schematic along with tuning instructions from **NostalgiaAir.org**.

INSTRUMENTS

As with all the previous restoration projects in this series, at a minimum, you'll need an isolation transformer, variable autotransformer, and a dim bulb current limiter. If someone has played around with the tuning coils, then you'll also need a vacuum tube voltmeter (VTVM) for voltage and resistance measurements. A DMM will also do, but a VTVM is best. If you intend to check capacitors in-situ instead of replacing every electrolytic, wax, and oil capacitor without testing, then you'll need a capacitance

Figure 1. Restored Zenith G725 AM/FM receiver.

In the FM mode, the broadcast signal from the antenna is amplified and converted to a 10.7 MHz intermediate frequency signal. Refer to **Figure 3**. After two stages of IF amplification, the signal is then fed to the limiter. The output of the amplitude limiter is fed to an FM discriminator and then on to the 1.5W audio amplifier.

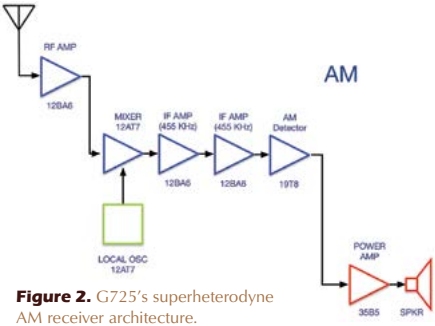


Figure 2. G725's superheterodyne AM receiver architecture.

Tube	AM Function	FM Function	Price
12BA6	RF Amp	RF Amp	$8.95
12AT7	Mixer/Oscillator	Mixer/Oscillator	$9.95
12BA6	First IF Amp	First IF Amp	$8.95
12BA6	Second IF Amp	Second IF Amp	$8.95
12AU6		FM Limiter	$5.95
19T8	AM Detector	FM Discriminator	$7.95
35B5	1.5W Amp	1.5W Amp	$3.95

Table 1. Tubes, AM and FM functions, and the **TubeDepot.com** price.

Post comments on this article and find any associated files and/or downloads at **www.nutsvolts.com/magazine/issue/2020/05**.

By Bryan Bergeron

meter. The capacitor function on many modern DMMs will be sufficient for this project. Similarly, unless you're lucky enough to have a radio with working tubes or happen to have a set of spares that you can swap in and out of the radio, you'll need access to a tube tester. Finally, a smartphone or tablet with a digital camera is a must have. Photograph everything before you start and at each major step along the way. It just takes one misplaced capacitor to double the time required for recapping the radio.

THE RESTORATION

Let's follow our usual restoration process (see the sidebar for a refresher).

External Inspection

Figures 4-9 show the external state of the G725 as I received it from an eBay seller ($26). The plum-colored Bakelite was in excellent condition, with no major chips or cracks. There were numerous flecks and small pits, but nothing severe. The flocking on the wire mesh grill covering the 7.5 inch front-facing speaker was matted to

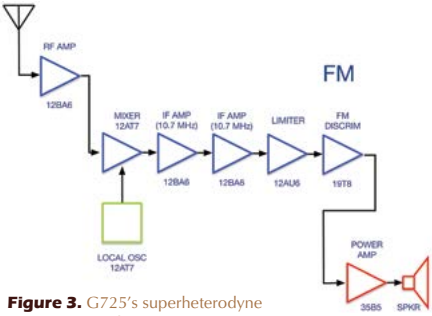


Figure 3. G725's superheterodyne FM receiver architecture.

Figure 4. Front of unit, before restoration.

Figure 5. Back of unit showing no signs of water or other damage.

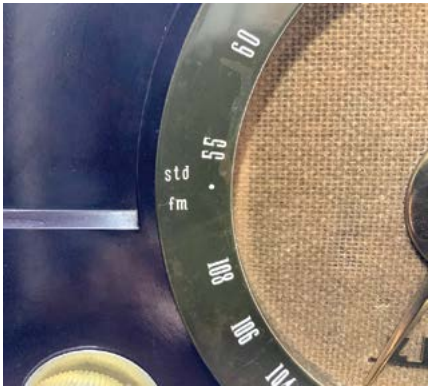


Figure 6. Close-up of tuning indicator and speaker grill.

Figure 7. Pitted corner and volume control.

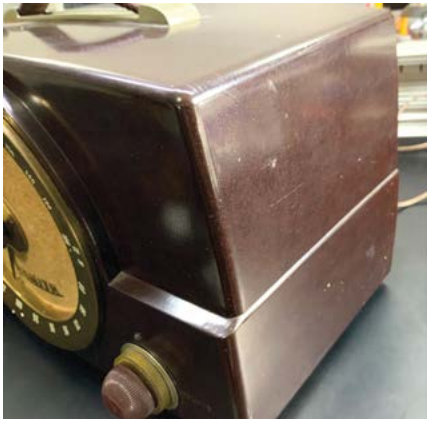


Figure 8. Side of unit.

Figure 9. Top pitting and handle showing oxidation.

the degree that it likely impeded higher frequency audio. The central tuning indicator/control had some excess play, suggesting the unit needed restringing.

The back of the radio (**Figure 5**) showed no sign of rain or other insult. A sticker clearly identified the unit as a G725. The vacuum tube placement chart on the underside of the radio — mainly intact (**Figure 10**) — identified the chassis type as 7G01. Lastly, the two-prong, non-polarized power cord was surprisingly in excellent condition.

Figure 10. Tube placement chart and power requirements from bottom of unit.

Figure 11. Removing front grill and knobs.

Figure 12. External components removed from Bakelite case.

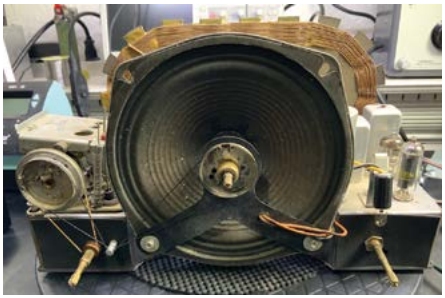


Figure 13. Front of unit, case removed, showing 7.5″ speaker.

Figure 14. Rear of unit, case removed, showing AM antenna.

Internal Inspection

Internal inspection (**Figures 11-17**) is a straightforward process that starts with removing the front grill and knobs. As shown in **Figure 11**, it helps to have a pair of plastic pry bars to remove the dial/grill structure (**Figure 11**). Set the grill and dial components aside (**Figure 12**) for cleaning. Note the use of cardboard spacers for the grill.

Facing the front of the unit (**Figure 13**), note the condition of the speaker, the cord between the two frequency control knobs, and the general condition of the chassis. From **Figure 13**, note the naked spacer post on the far-left edge of the chassis. Also note the NE-2 lamp that indicates power on/off to the right of the speaker, just above the power switch/volume control. The back of the unit (**Figure 14**) shows an intact AM antenna loop that obscures most of the chassis. There are connections for ground (stamped "G") and an external FM antenna (stamped "F"). Near the bottom center of the unit are the two male prongs for 115 VAC. Note there are no fuses.

The top of the unit (**Figure 15**) shows the seven vacuum tubes, roughly aligned with the signal path from left to right, starting with the 12BA6 RF amp at the lower left of the chassis and the 35B5 audio amp at the lower right of the chassis. The single canned filter capacitor is just behind the speaker, adjacent to the 35B5.

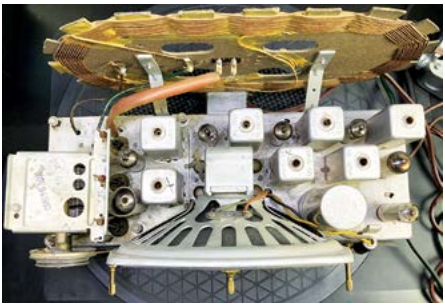


Figure 15. Top of unit, case removed, showing tubes and filters.

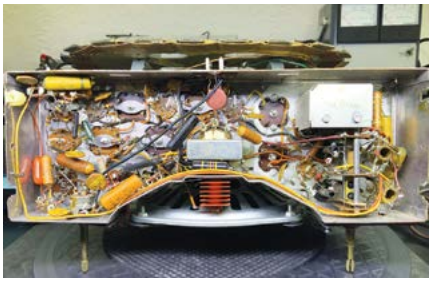


Figure 16. Underside of unit, bottom cover removed, showing components.

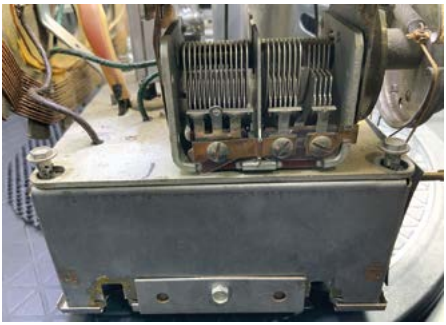


Figure 17. Side of unit, showing tuning capacitor and missing grommets.

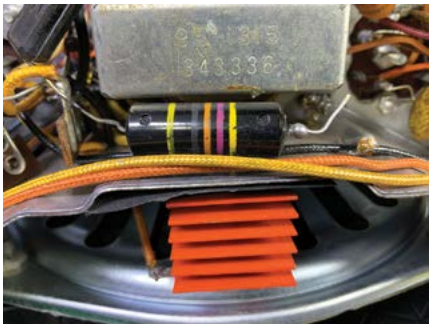


Figure 18. Selenium rectifier (orange plates).

Figure 19. Replacement silicon diode and series resistor.

The bottom or component side of the unit (**Figure 16**) is covered by a steel cap attached with two metal screws on either side of the radio. Removal of the cap reveals clean point-to-point wiring with almost no dust or sticky residue. About two dozen wax paper capacitors are visible, all of which will be replaced. Note the date stamped on the chassis: Nov 20, 1953. The bright orange selenium rectifier is dead center, just behind and below the speaker. A large, black, oil-filled bumblebee capacitor can be seen immediately opposite the rectifier.

Note that because the bottom metal cover is a tight fit, it's often not replaced. I've had several Zenith radios with the same or similar chassis that arrived without the metal cover. This is a problem because shielding is incomplete, and the circuitry is more susceptible to interference.

The large variable air capacitor is mounted on the left

side of the radio. As shown in **Figure 17**, the plates on the capacitor are clean, parallel, and not touching the adjacent opposite plates. The mica dielectric on one of the trimmer capacitors is out of alignment — an easy fix.

The biggest problem revealed in **Figure 17** is the missing grommets on the front and rear corners of the chassis. Both the plate currently resting directly on the chassis and the chassis are equipotential at DC because the plate is attached to the chassis toward the middle of the unit by a length of flexible braid. At RF, the plate and underlying chassis are not of equipotential. This design apparently avoids ground loops.

Similarly, the four grommets insulating the speaker mount from the main chassis had disintegrated. Whatever the engineering intent, without the insulating grommets in place, the radio does not work correctly.

Cleanup

Cleanup is normally a time-consuming process involving multiple cleaners, compressed air, and lots of elbow grease. That was not the case here. I used some compressed air and cleaned the top of the radio. No other cleaning was required.

Power Supply Upgrade

The power supply upgrade for this radio is a simple silicon-selenium swap with the addition of a series resistor to make up for the lower voltage drop across a silicon diode. See **Figures 18** and **19**. The bright orange selenium rectifier is bolted to the chassis with a single sheet metal screw. Remove the screw and use it to mount a four-pin terminal strip. Mount an IN4007 diode (1KV at 1A) and a 100 ohm at 5W series resistor on the strip and connect the AC in and DC out wires. Based on my tests, the voltage drop across the 100 ohm resistor is just enough to make up for the increased efficiency of the silicon diode.

Recapping

Recapping and, potentially, swapping new resistors for old is facilitated by the point-to-point wiring of relatively large components. No SMT tweezers or magnifying glasses required here. As you know, my approach to recapping is all-out war. I replace everything electrolytic and wax/paper with new poly caps with very conservative voltage ratings. For example, as soon as I purchased this radio, I ordered a replacement can electrolytic capacitor from Hayseed Hamfest — my go-to for old and new canned electrolytics.

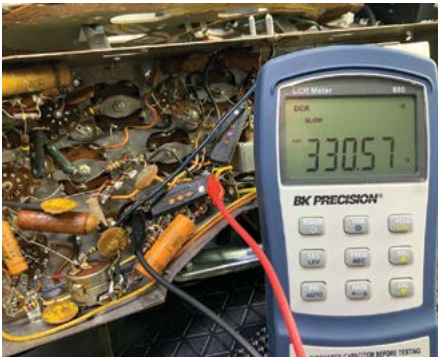


Figure 20. Testing a rectangular resistor in-situ.

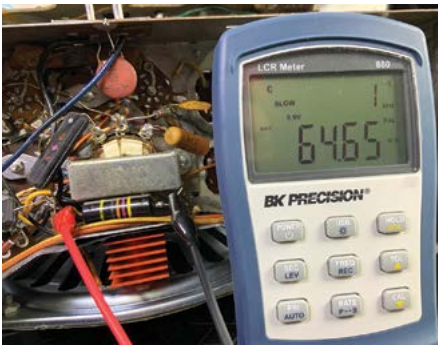


Figure 21. Testing an oil capacitor in-situ.

In this older radio, you may be surprised by oddly shaped components, such as the rectangular resistor shown in **Figure 20**. In-situ testing with a VTVM, DMM, or (preferably) a dedicated component tester such as the BK Precision LCR meter can verify component type and value. **Figure 20** shows a 330 ohm (orange, orange, brown) resistor. From the size, I believe it's a 5W resistor.

Figure 21 shows the in-situ testing of the (physically) large bumblebee capacitor. The outside foil lead (the lead on the right with the solder bulb) is lifted for the measurement. Note the discrepancy between the expected

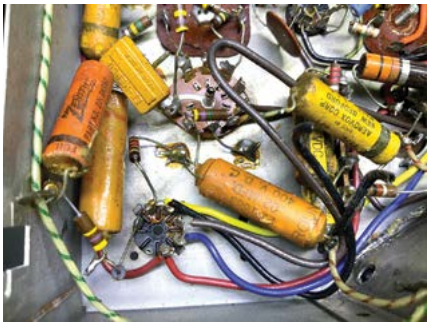


Figure 22. Three-lead capacitor.

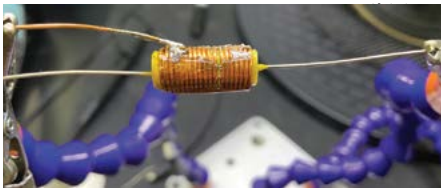


Figure 23. Winding new capacitor.

Figure 24. New three-lead capacitor ready for installation.

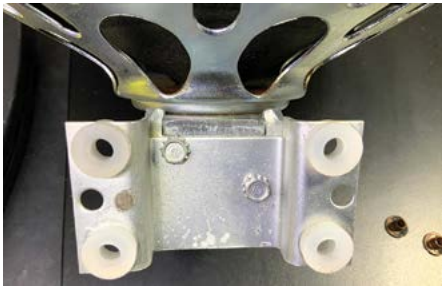


Figure 25. Speaker with replacement silicone grommets.

Figure 26. Chassis with replacement silicone grommets.

value of the capacitor, .047 µF (yellow, violet, orange, black, yellow), and the measured value of 64.55 nF or .065 µF. **Figure 22** shows one of the surprises in this radio: a three-lead wax capacitor. The outer lead of the capacitor is a grounded shield. I made a replacement capacitor by winding a coil of bare copper wire around a poly capacitor (**Figure 23**) and encasing the capacitor in clear shrink wrap (**Figure 24**).

Switch and Potentiometer Cleaning

I cleaned the potentiometers and switches with a few liberal squirts of CRC QD Electronic Cleaner. Because the cleaner doesn't provide any long-term protection against oxidation, I followed up several hours later with a very small amount of DeOxit. Because DeOxit becomes gummy and attracts dust over time, avoid overspray onto the chassis or other components.

Chassis Repair

I replaced the four silicone grommets between the speaker and chassis (**Figure 25**) and the four silicone grommets between the floating plate with the tuning

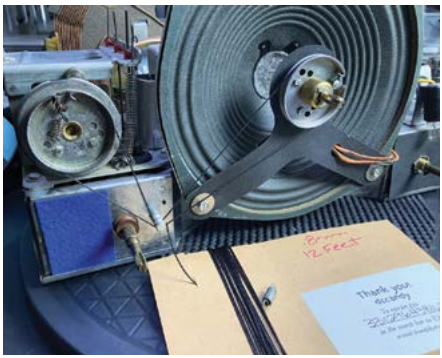


Figure 27. Restringing central control.

Figure 28. Central control close-up.

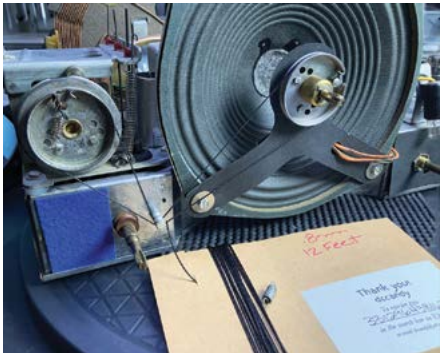


Figure 27. Restringing central control.

Figure 28. Central control close-up.

capacitor (**Figure 26**).

Next, I replaced the cord connecting the variable air capacitor shaft connected to the outer ring of the potentiometer on the left with the frequency indicator at the center of the speaker.

Refer to **Figures 27-29**. Make certain you use cord advertised for radio repair. It has just the right mix of elasticity and friction.

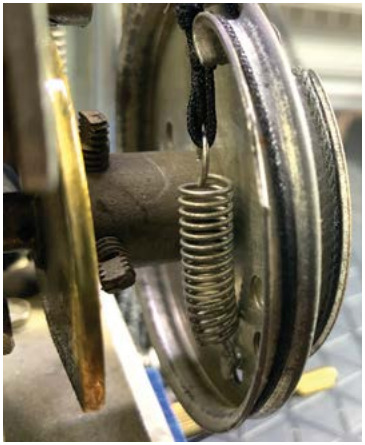


Figure 29. Capacitor control close-up.

Resistance Check

Given the simplicity of the circuit, I performed a cursory resistance check. I checked the resistance across the power input, across the high voltage to ground, and across the electrolytic capacitors and ground. I didn't find any faults.

Power-On

If you've been following this series, the initial power-limited testing with an isolation transformer, a Variac, or another variable AC voltage transformer and dim bulb current limiter should be second nature. Assuming an uneventful limited power-up, remove the current limiter from the circuit and apply full normal line voltage. Attach an FM antenna to the radio and try to pick up stations on each band. Are the signals strong and clean? Is there any hint of hum? How does the speaker sound?

If you're lucky, you may be able to skip the alignment step. More likely, however, is that your radio will require a little tweaking for the best reception.

The Restoration Process

As a reminder, the restoration process that I've advocated throughout this series is, in order:

- External Inspection
- Internal Inspection
- Cleanup
- Component Selection
- Power Supply Upgrade
- Recapping
- Potentiometer Cleaning
- Display Upgrade
- Resistance Check
- Power-On Check
- Adjustment
- Reassembly
- Burn-in

Figure 30. Bakelite case at final stage of refinishing.

Bakelite

Bakelite, invented over a century ago, was the first synthetic plastic made entirely from synthetic components. Because it didn't rely on natural materials such as rubber latex (rubber), plant cellulose (Celluloid), or milk protein (Galalith), it was inexpensive, and production was independent on the output of farms. Resistance to heat and electricity made it perfect for electrical appliances such as tabletop radios, telephones, clocks, and lamps. The glossy finish and feel made it attractive for consumer jewelry applications.

COSMETICS

Bakelite is a joy to work with. To bring back the original finish, I used a pad of super-fine steel wool and a good amount of Brasso to both remove a layer of Bakelite and polish the newly exposed Bakelite. After about 10 minutes of vigorous polishing, I washed the case in warm water and Dove liquid. I used the same Brasso and a fresh fine steel wool pad to polish the brass trim before returning the speaker grill and tuning indicator to the Bakelite case.

ALIGNMENT

Alignment (if needed) is a straightforward process that's defined in a full-page table on the schematic. As detailed in the instructions, you'll need a stable signal generator to perform separate AM and FM alignments. This Zenith radio uses a standard 455 kHz IF on AM and 10.7 MHz IF on FM.

Using the instructions in the schematic, set the signal generator to the specified frequency and modulation and — with the proper plastic tools — adjust the specified inductors in turn for maximum output.

The major challenge aligning this radio, compared with the later Zenith models, is that FM slugs were fixed with some sort of cement.

As per the instructions on the schematics, I had to use a hot soldering iron to loosen the cement. The AM slugs had no such treatment.

Lastly, I recruited the help of an artist to apply yellow enamel paint to the very slightly raised labels above the left and right knobs on the receiver. The lines used to form letters are the width of a toothpick, requiring a high level of small muscle coordination. Refer to **Figure 30**.

BACK TOGETHER AGAIN

Reassembly involves sliding the chassis into the Bakelite case, attaching the potentiometer knobs, and securing the bottom of the unit to the case. **Figure 31** shows the fully assembled radio on my workbench during the 24 hour burn-in. **Figure 32** shows a close-up of the cosmetic work.

END RESULT

In all, restoring the G725 was an enjoyable way to spend the weekend, with help on the artistic end.

What's more, the deep plum Bakelite is a conversation piece just sitting there. **NV**

RESOURCES

Antique Electronic Supply (**tubesandmore.com**)
Handles just about everything, from metal can capacitors to schematics of vintage radios.

Hayseed Hamfest LLC (**hayseedhamfest.com**)
Custom replacement electrolytic can caps and kits for audio and ham electronics.

HiFiEngine.com
Manuals and schematics for vintage radios.

Radiomuseum.org
Summary photos and documentation on just about every radio receiver ever produced. A great starting point.

The Valve Museum (**www.r-type.org**)
Detailed specification on just about any vacuum tube ever produced.

TubeDepot.com - My go-to source for vacuum tubes.

Turntableneedles.com
Good source for hard-to-find schematics.

Figure 31. Reassembled radio during burn-in.

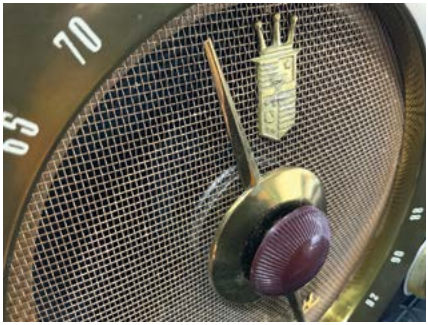


Figure 32. Close-up of grill, central control, and dial.

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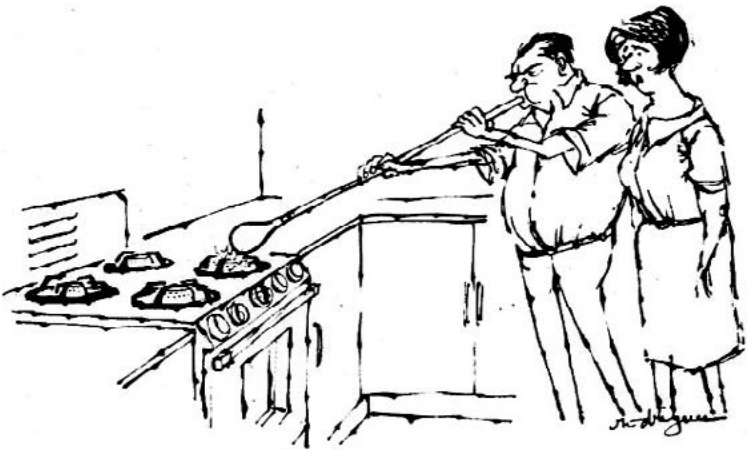

"... Oh, stop it, Joe - you'll never be able to make a 201-A."

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About the cover: A vintage Valentine Day postcard bears the message

Valentine Thoughts
A message comes, I hear it clearly
It says "I love you, very dearly"

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