

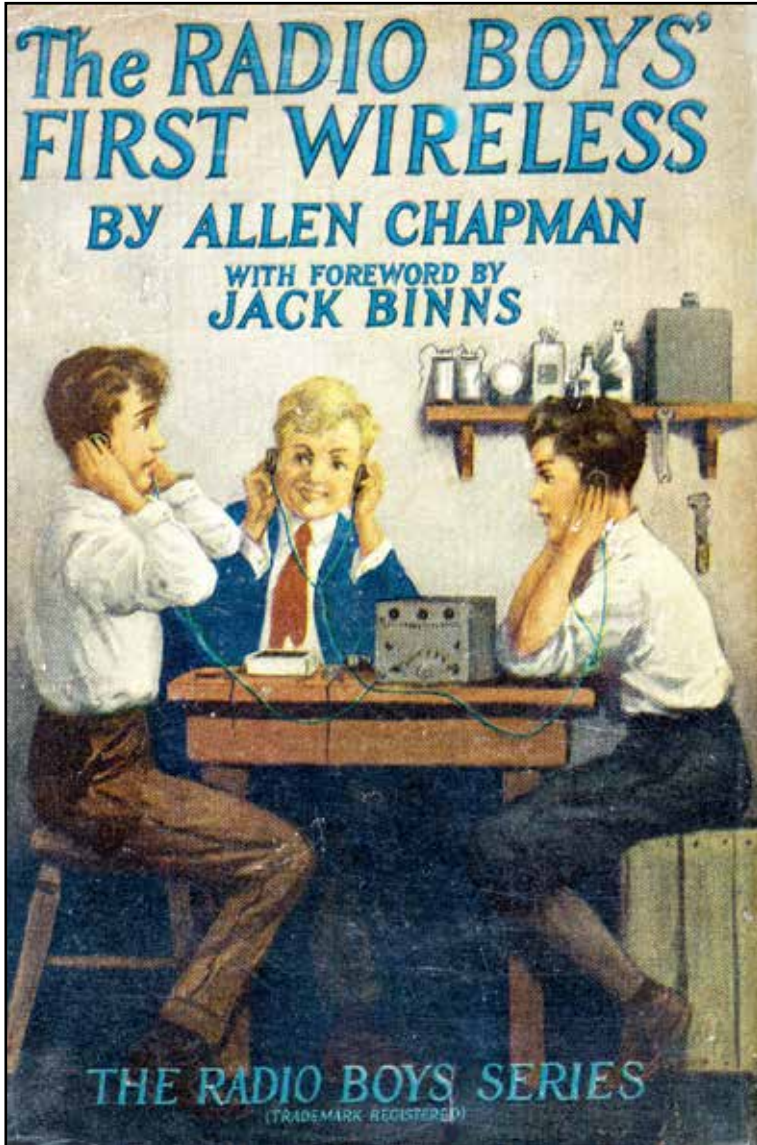


ARCI NEWS

www.antique-radios.org

Affiliated AWA
Antique Wireless Association 

Volume 41, Issue 4
August 2021



Radio Boys was the title of three series of juvenile fiction books published by rival companies in the United States in the 1920s

ARCI LIVE ONLINE VIDEO MEETS

MONTHLY LIVE ONLINE MEETINGS CONTINUE

Generally, 3rd Saturday of the Month

10AM – 12 NOON CENTRAL

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



Note: There will be NO ONLINE MEET in August

The meet is taking a well deserved vacation

SATURDAY, September 18, 2021, 10AM CT

10:00 AM CT – noon CT. (Zoom meeting opens 15 minutes before)

Register at

https://zoom.us/meeting/register/tJlrceisrj4pGNxvPcfmRM_eMcCtNv27jeBD

Upcoming ARCI IN-PERSON MEET SCHEDULE

August 7, 2021	Saturday Outdoor 7:00 AM to 11 AM	American Legion Hall Carol Stream, IL
October 3, 2021	Outdoor Business Mtg / Officer Election 7:00 AM to 11:00 AM	American Legion Hall Carol Stream, IL
December 5, 2021	Indoor Business Meeting 7:00 AM to 11:00 AM	American Legion Hall Carol Stream, IL

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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/UCEyMw9QGrcquC1vZBvHWbQ>

Join ARCI

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

-or-

Use the application in this newsletter

Leadership

President:	Tom Kleinschmidt
Vice President:	Jim Novak
Vice President:	Tom Zaczek
Treasurer:	Rudy Hecker
Secretary:	open
Membership:	Elaine Hecker
Radiofest chair:	Steve Muchow
ARCI News editor	Maureen Blevins

Contact ARCI

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PRESIDENT'S MESSAGE

First off, a big THANK YOU to Elaine Hecker for taking on club membership management. Elaine consistently helps in many ways applying her organizational, financial, and analytical talents.

The June swap meet went very well. The weather was great. Attendance was a bit lower than April but I think we may attribute that to the event being held on Father's Day. We expect next year the June meet will again be held in conjunction with the Six Meter Club Hamfest.

Now that Illinois is in COVID phase 5 we are booking swap meets further into the future. In this issue and on our website, you will find swap meet dates listed through December 2021. ARCI On-line meet dates have been booked through this year as well.

The inventory of donated items in the ARCI storage locker has again become large. We expect to bring much of it to the August swap meet. It consists of table radios, CBs, test equipment and communication receivers. The communication receivers include many restoration projects and parts sets.

SWAP MEET

In the SPIRIT of Radiofest we are having a Saturday meet

SATURDAY, August 7

7AM – 11AM

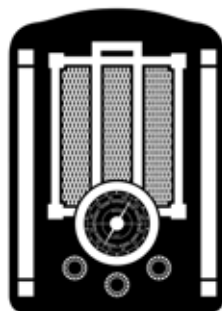
AMERICAN LEGION HALL

570 South Gary Avenue

Carol Stream, IL 60188



- OUTDOOR swap meet
- DONATION SALE and AUCTION
- RESTROOMS and REGISTRATION - inside

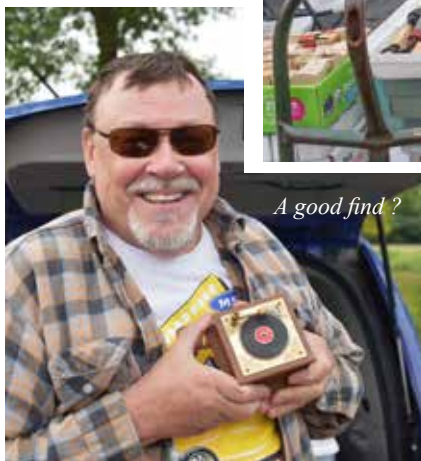


ARCI UPDATE

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



Treasure hunting



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



A fine example



You got how much?



Does it work?



Make me an offer



RADIOFEST 2021 PLANNING UPDATE

By Steve Muchow, *Radiofest* Chair

Historically, the August issue of ARCI NEWS is packed with the latest information on the upcoming ARCI *Radiofest* which is typically only weeks away. Unfortunately, for the second year in a row our August issue is confirming the cancellation (or maybe postponement is a kinder word) of *Radiofest* for the year due to pandemic restrictions and unknowns. While Illinois has made great strides in reopening, there are still some bumps in the road on the way to total stability. We will continue to keep an eye on this and hopefully it will be in our rear-view mirror well-before *Radiofest 2022*.

It is still early, but initial planning for *Radiofest 2022* is underway! 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 next 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 ZONE
A Column on ARCI Special Items of Interest
By Tom Zaczek



ARCI Online Meet #14:
SATURDAY, September 18, 2021
10AM CT

Join in on your computer, pad or phone to be a part of our online video meetings!

Click here to [Register](#)

or

<https://zoom.us/meeting/register/tJUrdGrqTktHNEwRV8iZKn4CoMuxpp8oFj2>

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 July 2021) are available for viewing. You can find the channel here:

<https://www.youtube.com/channel/UCyMw9QGrvqcuC1vZBvHWbQ>

Check it out, subscribe, and stay tuned to the ARCI emails for more info!

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: The presentations have not been lined up yet for

the September 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 just 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**
 - o 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 for 2021 - Generally, the 3rd Saturday of each month 10AM CT--(*dates subject to change*)

**PLEASE NOTE WE ARE NOT HAVING
AN ON-LINE VIDEO MEETING IN AUGUST**

Planned ARCI live on-line video meets for 2021

Generally, the 3rd Saturday of each month 10AM CT--(*dates subject to change*)

Saturday, September 18th

Saturday, October 16th

Saturday, November 20th

Saturday, December 18th

Be a presenter!

Share your project and passion with a 10-minute or longer presentation. Send an email to remote-events@antique-radios.org with your idea. 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. Please click this link for the membership form: [Antique Radio Club of Illinois \(antique-radios.org\)](http://www.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

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.

NEWS FROM THE HAMSHACK

By Jim Novak, WA9FIH

Abbott Instrument's TR-4 VHF Transceiver

When we see "TR-4," most of us think of a popular Single Sideband transceiver sold in the 1970's by the R. L. Drake Company from Miamisburg, Ohio. But there was another TR-4, manufactured by Abbott Laboratories prior to World War II! Abbott's TR-4 was a "pack set," a low power AM transmitter-receiver capable of operating from either 6 V DC or 115 VAC, in the 2-1/2 Meter band.

Frequency assignments for us ham operators evolved in basically a harmonically related scheme. The 160 Meter band, for example, 1.8-2.0 Mc (just above the AM Broadcast band) doubles up to 3.6-4.0 Mc., usually referred to as 75 or 80 Meters. $3.5 \times 2 = 7$ Mc (40 Meters), $7 \times 2 = 14$ Mc (20 Meters) and so on. Our Ten Meter Band, 28-30 Mc, doubled to 56-60 Mc, Five Meters, which doubled again to 2-1/2 Meters, and so on. Following WW II, there was a major realignment of frequency allocations which mainly affected our ham VHF allocations. Instead of Five Meters, we have Six Meters, 50-54 Mc., Two and a half Meters became Two Meters – 144-148 Mc., and so on. By the way, back in the days of analog direct broadcast TV, those channels began with Channel 2 – 54-60 Mc – the original Channel 1 allocation was found to be unusable for TV due to frequent sporadic-E layer ("skip") band openings which caused massive co channel interference, but gives us ham operators lots of pleasure hunting down contacts with stations around the U.S., Canada, islands in the Caribbean, etc.!

Anyway, back to our story. The Abbott TR-4 was, for its time, a compact portable type unit, about 9 x 8 x 4-1/2 inches, plus an external 115 VAC or battery power

supply. It used a Hytron HY-615 detector tube and a HY-75 as the transmitter, with common audio circuit using a 7F7 and 6V6 or 6L6. A single button carbon microphone element supplied transmit audio. The radio was reviewed in December 1941 *QST*, which mentioned the manufacturer's claim of 5 to 75 (!) mile range, the latter if connected to an appropriate elaborate antenna!

Since the Abbott was introduced just prior to WW II, their production quickly turned to the war effort, and the TR-4 became a unit tagged for use in the War Emergency Radio Service – WERS. Abbott disappeared from the scene shortly after the end of the war, and with the realignment of frequency bands, it is unlikely that many of these radios survived in their original state.

Prepare for Civilian Defense



**on 2½ METERS with the new
ABBOTT TR-4 TRANSMITTER-RECEIVER**

Designed for either fixed station operation or as a mobile unit in automobile, truck, boat or airplane... the TR-4 requires a 6 volt battery or 110 volt, 60 cycle A.C. power supply. Its separate receiver employs a Hytron HY-615 as a super-regenerative detector, while the transmitter utilizes a Hytron HY-75 as an ultra-high frequency oscillator. Operating at approximately 15 to 20 volts, the detector becomes extremely sensitive, and reduces receiver radiation to an absolute minimum.

The receiver portion of this Abbott TR-4 incorporates a specially designed circuit in addition to numerous mechanical refinements, including front of panel control variable inductive coupling, variable sensitivity control, audio volume control, etc. . . .

Absolute separation of transmitter and receiver sections eliminates the inconvenience of retuning when switching from SEND to RECEIVE during a contact. A ganged antenna condenser switch is automatically operated when the single, master SEND-RECEIVE switch is operated, enabling the use of a common antenna for both the transmitter and the receiver. The 5 inch PM speaker is self-contained.

● FREQUENCY: 112 to 114 MC. ● RANGE: Varying from 5 to 75 miles, depending upon terrain. Contacts up to 150 miles have been completed in field tests. ● TUBES USED: One each of Hytron HY-615, Hytron HY-75, 7F7, 6V6 or 6L6. ● MICROPHONE: Any good single button microphone.

TR-4 Overall size 9" x 8" x 4½", less tubes and power supply, list price (subject to amateur discount) \$65.00

**ABBOTT
INSTRUMENT, INC.**
8 WEST 18 STREET • NEW YORK, N. Y.



MRT-3

High power 120 watt output, 2½ watt transmitter for automobile, truck, boat or airplane. Simple to install and operate, with a reflex-tube operating range of from 5 to 50 miles.

Less tubes and power supply..... List \$49.00



DK-3

Unusually low priced, portable, 2½ watt transmitter with special Variable Distance Coupling. Operates only 2½ hours per hour. Effective range is from 2 to 25 miles. Less batteries and tubes..... List \$32.00

This ad appeared in the December 1941 issue of *QST* magazine, introducing the Abbott TR-4 as suited for Civil Defense purposes.

An exceptionally rare WWII vintage Abbott TR-4 "Ultra-Short Wave" VHF transceiver.



Images courtesy of The Museum Of Yesterday, Chesterfield, VA

Rear view of the 1941 TR-4 showing the vintage HY-615 receiving and 2C26/HY-75 transmitting tubes. It was one of the first devices to commercially deploy the recently introduced (at the time) "loctal" tube (shown to the right of the HY-615).



HISTORY ZONE

An Occasional Column on Radio Related Items of Interest

The Unsung Story of the Greatest Industrial Designer

by Gary Hoover

*Outside of the field of product and transportation design, too few people know who Raymond Loewy was. The best-known industrial designer, founder of the industrial design profession, and member of the pantheon of our greatest designers, it is time for wider recognition of this amazing man. Coming to the United States from France in 1919 at the age of twenty-five with \$40 in his pocket, Loewy brought with him a love of trains, cars, and good design, but he soon also developed a love of America. He was featured in **Fortune** and **Life** magazines and made the cover of **Time**. Forty years ago, he was engagingly interviewed on TV's [60 Minutes](#). Called "the frog" and "a refrigerator designer" by leaders of the auto industry, he created some of the most visionary automobiles in American history. He trained and developed dozens of other top designers. Today we see his work every time we see Air Force One, the Shell Oil or Exxon logos, or the Greyhound dog on a bus. Over his sixty-year career, he reshaped the world as we know it. This is his story.*

Beginnings



Born in Paris on November 5, 1893, Raymond Loewy was middle class and educated, the son of a Jewish father and Catholic mother. His father's job as a business journalist introduced Raymond to writing and world affairs. As a teen, he published a newspaper for his neighborhood—the first sign of his entrepreneurial bent. The boy soon showed a love of art, constantly drawing locomotives and automobiles. His mother took him to railroad roundhouses to watch the action, which he loved. At fifteen, he patented his design of a model airplane. Developing skill at selling his ideas and making presentations, he started a company to sell the planes, but soon sold it. He built speedboat models that won acclaim. And he earned a degree in engineering at the University of Paris.

Then World War I came to Europe. Loewy served four years and two months on the front, earning decorations for combat bravery three times. By the war's end, both his parents had died of the Spanish flu, which killed millions. They left little inheritance. His two older brothers had moved to the United States and become successful in banking and medicine. In 1919, he followed them, sailing to New York on the *SS France* with one set of clothes—his army uniform—and \$40 that his brother had loaned him. As he crossed the Atlantic, he drew sketches of parts of the ship and of other passengers.

The American

Loewy hoped to apply his education and get a job as an electrical engineer at General Electric. Meeting his brothers' friends, he was introduced to the head of Macy's. He accepted a job to dress one of Macy's main store windows. Rather than the ornate, cluttered look then in vogue, he used just one mannequin, one spotlight, and a mink stole at the foot of the mannequin. Pure simplicity. When he came to work the next day, he sensed the dismay of his co-workers and resigned before they could fire him.

Loewy's shipboard sketches, however, had drawn the attention of fellow passengers, leading him to meet magazine editors and advertising men. He sensed the opportunity to make money as an independent sketch artist. Soon he was doing work on print advertising for Wanamaker's Department Store, the Butterick Pattern Company, the White Star shipping line, and Pierce-Arrow motorcars. He even designed costumes for the great Broadway showman Flo Ziegfeld.

He used his European roots to his advantage, separating him from the competition. He wrote his brother that, soon after landing, he was getting \$75 each for sketches he whipped out in an hour, even while speaking no English. In 1924, *Harper's Bazaar* magazine became his most lucrative account, and the fashion editor took him under her wing, introducing the thirty-year-old Loewy to New York's elite. He made the most of his new contacts. By 1927, he was designing uniforms for Saks Fifth Avenue's elevator operators and illustrating many of the store's print ads.

Nevertheless, Loewy was "successful . . . but intellectually frustrated," he later told the *New York Times*. Working with the big department stores, he saw the expanding flow of new products and consumer conveniences as the urban middle class grew. He said, "Prosperity was at its peak, but America was turning out mountains of ugly, sleazy junk. I was offended my adopted country was swamping the world with so much junk." Despite making \$30–40,000 per year as an illustrator (\$400–600,000 in today's money), he wanted to have a greater impact.

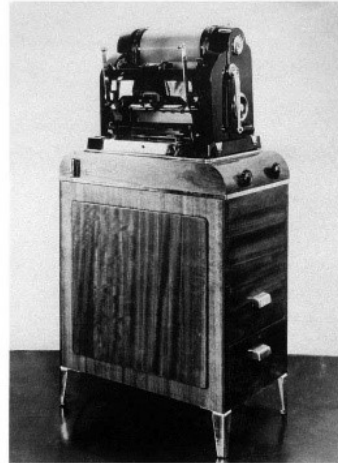
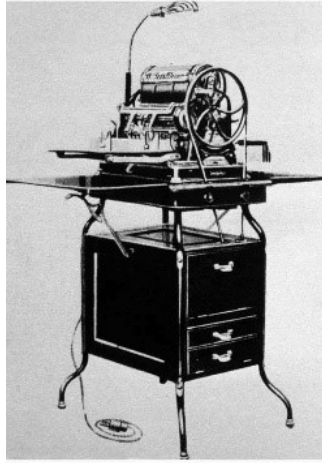
The Industrial Designer

Loewy later wrote, "The country was flooded with refrigerators on spindly legs, and others topped by towering tanks. Typewriters were enormous and sinister looking. Carpet sweepers when stored away took up the greater part of a closet, and telephones looked (this is no pun) disconnected. I felt that the smart manufacturer who would build a well-designed product at a competitive price would have a clear advantage over the rest of the field when things would become tough. . . . Competition would become fierce, good design would help sales, manufacturers could be convinced—and I was the one to do the job, both the designing and the convincing."

So Raymond Loewy "hit the road" with a business card reading, "Between two products equal in price, function and quality, the better looking will outsell the other." Traveling from one manufacturing company to the next in the industrial

Midwest, his Frenchness did not provide the “chic” boost that it had in New York. He spent hours in waiting rooms and rode train after train: to Akron, Chicago, Cleveland, Pittsburgh, Toledo, and “points west.” Rejection after rejection, he kept calling, kept begging industrial leaders to see his vision of a better-looking world. He said, “No one in the manufacturing world had ever heard of industrial design, and no one was interested. My life was a dreary chain of calls on bored listeners.” But Raymond Loewy was not the kind of man to give up on his visions and dreams.

Working with the big ad agency Foote, Cone, and Belding, Loewy was sent to London in 1929 on an account. Sitting in the waiting room of the ad agency, he talked about how London taxis could be better designed. Overhearing the conversation,



*Gestetner Duplicating Machine, Model 66
(before and after Loewy) 1929.*

British and American duplicating machine manufacturer Sigmund Gestetner asked Loewy if he could improve the design of their machines. He said he could do it in three days and would charge \$500 if the design was not good; \$2,000 if the design was used.

After celebrating with champagne, Loewy ordered a hundred pounds of modeling clay, tools, and a floodlight. Gestetner loved the design, put it into production in the early 1930s, and hired Loewy to do more work. Thus began his career as the most important industrial designer of all time.

Throughout that career, Raymond Loewy believed in beauty in commerce. Never a proponent of “art for art’s sake,” he said, “The goal of design is to sell. The loveliest curve I know is the sales curve.”

As his career evolved, Loewy carefully crafted and developed his image as a European sophisticate. His clothes, homes, and custom-built cars were always striking. He said that “a good life has been as important to me as my work; in fact, the two of them are bound up in each other.” Despite his high income, the stock market crash of 1929–30 put him “\$125,000 in the hole,” but he soldiered on, always believing in himself.

In 1931, Raymond Loewy married Jean Thompson. While they divorced fourteen years later, Jean remained a friend and key executive at his growing companies.

Raymond always loved cars. He had filed patents on a headlight, a radiator, and two automobile bodies when in the early 1930s he was hired by Hupp to design new Hupmobiles, resulting in the 1932 Spyder and 1934 Sedan, both advanced designs for the era.



By Alden Jewell - 1934 Hupmobile Aero-Dynamic Sedan, CC BY 2.0, <https://commons.wikimedia.org/w/index.php?curid=36425987>

During that same era, other designers began to share Loewy's visions of better design. Respected competitor Henry Dreyfuss and Walter Dorwin Teague stand out. Visionary designer and author Norman Bel Geddes later drew acclaim for his work on the 1939–40 New York World's Fair. Competitor Henry Dreyfuss had redesigned appliances for Sears, Roebuck, but in 1933 accepted a refrigerator assignment from Sears's competitor General Electric. Unwilling to work for two competitors, he recommended that Sears contact Loewy for their refrigerator redesign. Sears asked Loewy to do a new design for its 1934 Coldspot refrigerator. Again starting with clay modeling, Loewy designed a streamlined model that was easy to clean. He charged Sears \$7,500 plus a \$25,000 bonus if sales hit high levels (taken together, \$600,000 in today's money). Sears also gave the new model six cubic feet of space when the norm was four cubic feet, but the retailer kept the price competitive (Sears always believed in saving the customer money through better features). For the next few years, Loewy continued to work with Sears, adding such features as aluminum shelf racks and crisper drawers. While



1934 Sears Coldspot Refrigerator

he believed in timeless design, he also supported continuous improvement. In 1934, Sears sold 30,000 Coldspots and ranked 11th among refrigerator providers. By 1939, Sears was selling 290,000 per year and ranked second in the industry.

The Sears Coldspot put Loewy on the map, gave him increased visibility, and enabled him to hire his first employee. He had also opened an office on Fifth Avenue. He soon added designers, a business manager, a public relations person, engineers, a model shop, and a clay and plastic modeling department. For an office party, he hired an unknown singer from Hoboken, New Jersey, named Frank Sinatra.

Raymond Loewy, Henry Dreyfuss, and Walter Dorwin Teague can be viewed as the creators of a new industry, the industrial design business. They were as much entrepreneurs as artists.

The Pennsylvania Railroad

Perhaps nothing inspired Raymond Loewy like the wonder of the age: the steam locomotive. He had watched and drawn them since his youth. Through one of his New York society contacts, he got an interview with Martin Clement, the president of the Philadelphia-based Pennsylvania Railroad, the most successful and best-run line in America. Loewy wanted to work for the railroad.

Clement asked, “What did you have in mind?” Loewy’s answer came quickly, “A locomotive.” Clement responded, “The trash cans in the New York Terminal (Penn Station) are terrible. What can you do with them?” Most people would have walked out the door at that seeming insult. Not Raymond Loewy. He then spent three days studying the trash cans and how they were used. He charged the railroad \$119 for three prototype designs.

Such was the beginning of one of the most important corporate relationships in Loewy’s long career. He was soon asked to take a look at the railroad’s locomotives. He rode in the cabs, holding a stick out the window with a white ribbon attached to the end to measure the airflow. He added toilets for the engineers. In 1934, he designed the Pennsylvania’s GG1 electric locomotive, one of the most beautiful, powerful, and fastest electric locomotives ever built: it could haul a twenty-five-car passenger train at a hundred miles per hour day after day. The GG1 remained in use on the New York to Washington route until 1983.

Next, the Pennsylvania asked Loewy to redesign its workhorse locomotive, the K-4



Loewy and his GG1

Pacific type. His 1936 streamlining resulted in the engine using three hundred less horsepower to go ninety miles per hour.

As Raymond Loewy's annual retainer from the railroad grew from \$20,000 per year to over \$100,000 by 1939 (almost \$2 million today), he worked on everything imaginable for the company. He said, "In our country, there is always a chance of success for everyone who knows how to do a thing well, delivers it on time, and sticks to his word." Loewy was unafraid to charge what the market would bear. Projects for the railroad included passenger car interiors, menu design, signal towers, a bridge over the Potomac, coffee cups, and even a bronze tablet for a retiring executive. Nothing bored Loewy or escaped his eye. He found the clocks in New York's Pennsylvania Station hard to read and submitted an unrequested proposal to improve them.

The height of Loewy's "power" with the railroad was expressed in the stunning 1939 S-1 locomotive; 140-feet long and weighing over a million pounds. It could pull a fourteen-car train at up to 140 miles per hour with its seven-foot diameter wheels.

As a star of the New York World's Fair, it was placed on a treadmill and ran at full speed in front of the thrilled visitors. As he had been since a child, Loewy was always equally thrilled, often traveling to remote locations



just to see one of his huge locomotives speed by.

Loewy on his S-1

Loewy's 1942 T-1 freight locomotive was another compelling design for the railroad. Perhaps Loewy's most beautiful work for the Pennsylvania Railroad was his 1936 design for one of its 342 boats, the ferryboat Princess Anne. Some 260 feet long, the ferry was the largest and fastest of its type, and included a dance floor, snack bar, and restaurant.

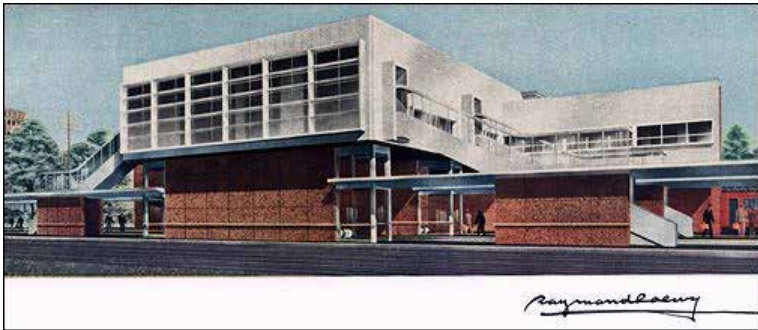
His work for the top railroad led to interior designs for such famous trains as the Burlington Zephyr, the Santa Fe Super Chief, and the Pennsylvania's own New York to Chicago Broadway Limited. Loewy worked with other top designers and at the same time was a competitor. Their efforts resulted in better and better products, as they observed each other's work. For example, Henry Dreyfuss streamlined the "Hudson" locomotives which pulled the competing New York

Central's crack Twentieth Century Limited, resulting in another classic of the streamlined train era.

Building a Business, Creating a Profession

After these many successes and related publicity, Raymond Loewy's star rose, and he brought many others into his company, Raymond Loewy and Associates. He hired two designers from General Motors' famous styling studios.

In 1936, William Snaith, a stage designer, joined him to plan and design retail interiors, which became a major business for the Loewy firm. The firm was among the first consultants to explore the psychology of consumers, tracking their movement through a retail space, noting their reactions to décor and lighting, and applying their findings. They advised supermarket chains and apparel stores, with clients ranging from Lord & Taylor and Macy's on the East Coast, to Hudson's in Detroit, to Lucky Stores on the West Coast. The department stores of the 1950s and 1960s reflected their vision. Their unprecedented interior for the "windowless" new downtown Foley's in Houston in 1947, built for Federated Department Stores, made *Time* and *Newsweek* magazines. The store, one of the few new downtown stores in America at the time, enabled stockrooms to be placed around the perimeter of each department, instead of in the basement or otherwise far removed. The firm even designed a train station for the Norfolk and Western Railroad in its headquarters city of Roanoke, Virginia, today the location of two museums and a [gallery about Loewy](#) (photo below).



Raymond Loewy paid his people well and created a profit-sharing system. But he knew that his "persona" was critical to the selling effort, and every final product went out over the Loewy name, not the name of the individual designers. Even his signature, like that of Walt Disney, was designed. Yet many learned well, and some went on to create their own firms, or head design schools. Young Gordon Bunshaft was among them—he went on to be a senior partner at top architecture firm Skidmore, Owings, and Merrill, and designed the pacesetter modernist Lever House in New York, among other famous buildings.

Loewy's key requirement was that any new hire must be able to draw just about anything and draw it fast. By 1938, he had hired eighteen designers, rising to fifty-six three years later.

Jay Doblin, who later headed the Institute of Design at the Illinois Institute of Technology, described life at the firm, where he had begun as an office boy: “During the late forties and early fifties, the Loewy office represented a truly marvelous design era that will never come again. There was fun and gaiety, prank-playing and camaraderie amongst us, and the work itself was incredible. . . . At [age] thirty, I was designing for Nabisco, Shell Oil. I had a free pass to go anywhere in the world, hire anybody and build as many models as I wanted. There was always plenty of money. Loewy was running a \$4 million operation with upwards of two hundred employees, so the place was packed with amusing and talented people.”

Loewy also hired women and ensured their fair treatment. Designer Audrey Hodges later said, “Each of us was given a number for our designs. They didn’t go by name; we were given a number, so no one ever knew whose work they were judging.”

A key addition in 1940 was Betty Reese, his publicity and public relations expert. Reese instructed him to stand to the right of big shots when pictures were taken, as Loewy would then appear in the photo on the left, and his name would come first in the caption.

The man knew how to change the minds of others, how to sell them on his vision. Reese said, “Loewy prepared for his presentations like a boxer preparing for a big match. He wouldn’t eat; he’d be at the office hours before everybody else; he’d practice every word, every joke.” She went on to say, “Loewy made sure to orchestrate the clients’ first view of his designs. If it was a car, for example, he would show it to them first from an impressive distance, from the end of a very long studio. He had learned that if the clients were allowed to get close to the car in a casual way, they would start picking it apart. He wouldn’t let them get near it until they had experienced it as a complete finished design.”

Loewy sketched initial ideas and edited every design. He had “an extrasensory talent for knowing the consumer marketplace” and “an uncanny feeling for what a product should look like.” While always pushing for better design, Raymond Loewy also realized there were limits to what the public would accept, resulting in his key concept of MAYA: “Most Advanced Yet Acceptable.” He also believed in streamlining and simplicity, viewing the egg as the most perfect package ever created.

When he hired Reese, he told her he wanted to be on the cover of *Time* magazine, which took her aback. But over eight years later, in October of 1949, they finally achieved that goal.

Despite his early start as an illustrator, Loewy developed the reputation of being a poor draftsman. Perhaps that resulted from his surrounding himself with people who could draw better than he could. In contrast, his competitor Henry Dreyfuss

was an excellent draftsman, even able to draw every idea upside down when sitting across the desk from a client.

While he took all the credit, could be aloof, and often spent his summers in luxurious homes in France and winters in Palm Springs, California, his ideas and personality were ever-present. Reese said, “The office would sometimes put on shows in which they’d spoof Loewy’s inability to draw or even his superficiality, but he was always the one to laugh loudest.” He was known for the compliments he would pile on the best artists and draftsmen.

As time passed, the Loewy design firm added more and more clients. He opened a highly profitable Chicago office, and in 1934 his first London office, which designed the Sunbeam Alpine car, Raleigh bicycles, the AGA stove, and restaurant interiors for the big Lyons Tea House chain. Raymond Loewy urged his clients to develop a “long-range design philosophy.” Later IBM adopted such a philosophy led by industrial designer Eliot Noyes, and today we see the same at work at companies including Apple and Target.



Loewy required that his shop staff be “full service,” willing to design anything that came their way. They increasingly worked on “corporate identity” and logos (including airlines TWA and United), packaging, and every other thing imaginable. They designed eggbeaters and stainless-steel kitchenware for industry leader Ekco Products (earning a retainer of up to \$75,000 per year), meat cans for Armour, china for Rosenthal, fountain dispensers for Coca-Cola, and ham radios for Hallicrafters. Over the years, more than five hundred members of his staff worked on the big Nabisco account, made difficult by squabbles with the company’s management. While competitor Henry Dreyfuss worked for John Deere, Loewy designed tractors, trucks, 1,800 dealership buildings, and an outstanding logo (in the image of a farmer on a tractor) for Deere’s then-larger competitor, International Harvester.

Raymond Loewy, along with Henry Dreyfuss, Walter Dorwin Teague, and ten others created the Society of Industrial Designers in 1944, the first professional organization for the field. The SID established ethical standards and only accepted full-time designers who worked on a broad scope of projects.



The Frigidaire Story

After working with Sears on refrigerators, he and the company parted ways, and he accepted work for General Motors' Frigidaire Division in Dayton, Ohio—one of the top makers of refrigerators. Always a great storyteller, Loewy reveled in the following one, which took place after dinner and wine with Frigidaire's General Manager Elmer Biechler. Late at night, Biechler drove Loewy out to watch the shift change at the Frigidaire plant.

Loewy wrote, "No sounding of horns, no brake screeches, only a mighty purr, a feeling—of order, precision, power. As we reached the crest of a hill we could see the stream of red taillights and the stream of white headlights fading away in the distance. The sprawling plant was ablaze with blue mercury light. Over certain areas the sky was shivering with the blue-white flashes of automatic welding. White, green, red and blue signal lights would punctuate the night. The whole sky was aglow. . . . I was utterly moved by the magnificence of it all. It was like seeing the actual flow of the rich, red blood of young, vibrant America. . . . We paused in a quiet spot, and Biechler took my arm and said: 'Loewy, boys work on our problem, in your penthouse office on Fifth Avenue, you may not realize the real importance of the pretty lines you put on paper. You see, every one of these men around us supports a family of four. . . . They all live well because they have a job. They have a job because, among other things, your design clicked. In this plant alone—and we have dozens of others all over the world—eighteen thousand men are employed. Eighty thousand dependents! And remember for each man employed at the plant, there are three in the field: salesmen, advertising men, maintenance men, traffic and transportation fellows, warehousemen and accountants, dispatchers and repair crews, electricians, statisticians, engineers, draftsmen, etc. That's another sixty thousand. If you add to that another 250,000 for dependents, you get a true picture. More than 320,000 people whose life is directly affected by the success of what you put on paper!'"

This story was key for Loewy, and he shared it when training his new staff members. He said, "We never lose contact with reality, and we do not underestimate our social responsibilities. As we have over one hundred active clients on our list, it may well be that the soundness of our designs affects the lives of millions."

But above all else, he was concerned about the lives of the ultimate customers, saying, "I believe one should design for the advantages of the largest mass of people, first and always."

More Transportation

Despite becoming the largest retail store design firm in the nation, and later renaming his company Raymond Loewy/William Snaith, Inc., in honor of his revenue-producing partner, the retail business never captured Loewy's heart—that remained in motion, in transportation.

In 1939, the firm had designed the interior of the Boeing Stratoliner airliner, and

in 1947, the interior of the powerful piston-engined Lockheed Constellation. Much later, they did the same for the Air France Concorde supersonic transport. They also did interiors for ocean liners.

The Greyhound Bus company, for decades the largest carrier of passengers in the world (larger than any airline or railroad), came to the Loewy office in 1939, asking for new paint schemes on their buses. Raymond Loewy told the head of Greyhound that their dog logo looked like a “fat mongrel.” Loewy contacted the American Kennel Club to learn more about the actual shape of greyhounds, resulting in a sleek new dog that is still used today.



Delayed by the war, Greyhound began to introduce new Loewy-designed buses in 1946, but the real advance came in 1954, when the bus company introduced his double-deck “Scenicruiser.” The air-conditioned bus with a restroom and air-cushion suspension changed the intercity bus industry. Loewy was so proud of the bus that he rented a showroom on New York’s Park Avenue to show off a full-scale mockup.

The Studebaker Story

No client brought more acclaim to Raymond Loewy and his staff than automaker Studebaker of South Bend, Indiana. Founded in 1852, the company by 1887 was the “biggest vehicle house in the world,” the leading maker of wagons and carriages. In 1897, John Studebaker’s son-in-law, Frederick Fish, convinced the company to enter the automobile business. At first it produced car bodies for others; then introduced its first cars in 1902, followed by the acquisition of other

car makers. In 1936, Studebaker remained one of the biggest “independents” (not one of the Big Three: GM, Ford, and Chrysler) alongside Hudson, Nash, and Packard. Chief executive Harold Vance invited Raymond Loewy to do some work on the 1938 line, then in the planning stages.

Over time, Loewy convinced Studebaker management that the company should differentiate itself by offering lighter, more fuel-efficient cars, an unusual thought for the era. He believed that there was an unmet market for “a slender, compact automobile.” Loewy’s firm added an office and studio in South Bend, which was plastered with signs that read: “Weight is the enemy.” Studebakers soon weighed 15 percent less than comparable Fords and Chevrolets, getting 25 percent better gas mileage.

The king of auto designers and father of big fins, Harley Earl at General Motors, mocked Loewy as a “refrigerator designer.” Yet Loewy had an important impact on future car design. Loewy kept adding staff on the Studebaker account, including young Virgil Exner from General Motors, who went on to head Chrysler’s successful 1950s design department. Another famous car designer—earlier responsible for the incredible Auburn, Cord, and Duesenberg cars—Gordon Buehrig joined the team. Loewy also paid close attention to the interiors of cars, having women designers focus on that work. Loewy’s 1938 Studebaker Champion was a hit, followed by the 1939 President which was named “the best-looking car of the year” by the American Federation of the Arts. Studebaker hired 1,500 new workers to meet the demand. In 1950, Studebaker hit its high point, selling about three hundred thousand cars, including the renowned bullet-nosed model, inspired by the fighter jets of the era.



1950 Studebaker

Loewy and his team engaged in continuous turf and ego battles with Studebaker engineers and executives, but his persuasive powers usually won out. The sporty 1953 Starliner was widely acclaimed and proved there was a market for a “personal luxury car,” opening the way for the Ford Thunderbird, Buick

Riviera, and Chevrolet Corvette. Unfortunately, Studebaker thought people would prefer the four-door sedan, but they wanted the sleek two-door coupe, which the company could not produce fast enough.

By the mid-fifties, Loewy was charging Studebaker a million dollars a year (\$9 million today). But the struggles with management and declining fortunes of Studebaker led him to close his South Bend office in 1956. Nevertheless, this was not to be Loewy's last (or most remembered) effort for Studebaker.

In 1961, new Studebaker chief Sherwood Egbert brought Loewy back to South Bend to create the Avanti, introduced in 1962. The fast, all-fiberglass car set twenty-nine speed records for a stock production car on Utah's Bonneville Salt Flats. The first American car to have disc brakes, with a dashboard lit red at night for easier visibility, the Avanti took American car critics and buffs by storm. While the Studebaker firm finally gave up making cars in 1963, Avanti fans continued production of the phenomenal car for several more years. The Avanti continues to be considered a highly collectible classic automobile, and one of Loewy's most famous designs.



Studebaker Avanti

These beautiful Studebakers were not Loewy's last transportation efforts. In the early 1960s, he designed the interiors and exterior paint scheme of Air Force One for his friends John and Jackie Kennedy. The latest versions of the president's plane continue to use Loewy's elegant paint scheme.

At the extremes of the transportation field, Loewy was asked to design NASA's Skylab and spacesuits in 1967. His most important contribution was that he added a porthole to Skylab so that the astronauts could (literally) see the world. The work gave the seventy-five-year-old great pleasure and publicity, which he made the most of.

Living Life to the Fullest

After divorcing (but remaining friends with) his first wife, Jean, three years later (in 1948) Loewy married Viola Erickson. That marriage lasted the rest of his long life. Always well-dressed, always at his side, helping at the company, Viola was his constant companion.

Loewy's cars were custom-built to his own designs, as were his fabulous houses (two in France, one in Palm Springs, California, and one outside of Mexico City, as well as his New York apartment). His Palm Springs house had an indoor-outdoor swimming pool that edged right up to the front door, causing some famous guests to fall in fully clothed. He hung out with comedian Jack Benny and actor William Powell. His French country estate was built in the sixteenth century by King Henry IV for one of his mistresses.

Of his lifestyle, he said, "Thus we live a life which, to us, is ideal. It is a blend of everything that makes life interesting and eventful. America gives me the opportunity to be creative and imaginative. Europe—and France in particular—brings relaxation and perspective. This slowing down is imperative in order to maintain a balanced outlook. It also gives me a chance to appreciate America more keenly." Loewy grasped the American energy, creativity, and opportunity like few others have.

The man never lost his zest for life. At seventy, he took high speed driving lessons with auto legend Carroll Shelby. At seventy-seven, he and Viola were careening around California beaches in a high-powered dune buggy. He loved racing, deep-sea diving, and speedboats.

By 1973, the eighty-year-old Loewy had 190 employees in New York, 48 in Paris, and 20 in London. But he finally decided to retire, selling his businesses in 1976. He still had energy left, beginning his book *Industrial Design* in that same year.

Raymond Loewy died on July 14, 1986, at the age of ninety-two. To call his life well-lived would be the ultimate understatement. To see his impact on our world, all you must do is open your eyes.



Sources and Further Reading: This biographical article is based on the book *Streamliner: Raymond Loewy and Image-Making in the Age of American Industrial Design*, by John Wall (2018). The best look into Loewy's mind, and the source of most of the quotes in this article, is Loewy's own 1951 autobiography *Never Leave Well Enough Alone*. Twenty-eight years later, Loewy published his design ideals in the excellent book *Industrial Design* (1979). Both of Loewy's books contain many great illustrations of his diverse work, as do books on Loewy by Paul Jodard (1992), Phillippe Tretiack (1999 and 2005), and Glenn Porter (2002). *Raymond Loewy: Pioneer of American Industrial Design* (1990), edited by Angela Schonberger, contains fascinating articles about Loewy by twenty-one

different writers. The best places to see Loewy on exhibit or learn about him are the [Hagley Museum](#) in Delaware and the [train station in Roanoke](#) mentioned above. To really meet the man, watch the [60 Minutes interview with Morley Safer](#); to see his work in a video, [watch this one](#). For a broad look at Loewy, his competitors, and the best of Industrial Design through history, get the book *Industrial Design A-Z* by Charlotte and Peter Fiell (2019) and *Founders of American Industrial Design* by Carroll Gantz (2014).



Loewy's Logos

This article first appeared in the [Archbridge Institute's American Originals Series](#) (October 2019) and was published November 7, 2019 by the American Business History Center at <https://americanbusinesshistory.org/the-unsung-story-of-the-greatest-industrial-designer/> Reprinted with permission



*A RARE MODEL RADIO CONSOLE Designed by Raymond Loewy circa 1948
Aluminum and painted brass*

RADIO ZONE

An Occasional Column on Radio Related Items of Interest

FrankenRadio: Bringing a Tube Superhet Back to Life

by David Kruh

I may work at the world's leading designer and manufacturer of analog and mixed signal semiconductor solutions, but my first love was an old tube radio in my parent's basement. Growing up during the 1960s I would listen to Top-40 AM radio stations from all over the country on this old Philco. (I later had a *very* brief career as an AM radio disc-jockey, but the story of my misspent youth is for another time.) Though I later got my Masters in Engineering, my colleagues will attest to my continued love for old wooden and Bakelite radios, as I have more than a few in my cubicle here on the Wilmington campus.

Like many of my fellow antique radio collectors, I always seem to have a few “someday I’ll get to it” radios; the ones we collectors buy, put on a shelf, only to gather dust as other radios get priority. So it was for me with this GE220, a post-war Superhet Bakelite tabletop that I bought for \$20 at a flea market many years ago. The fact that the radio was missing its back didn’t trouble me - I liked that it had a shortwave band and was a lot heavier than later, lighter, All American Fives that would soon flood the market. It felt sturdy, almost like manufacturers wanted to assure the American public that our wartime and Depression years of sacrifice were over.



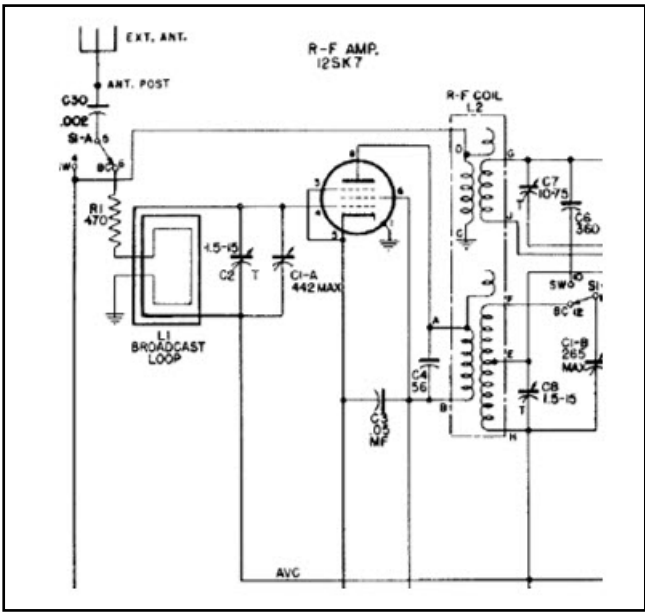
This past summer, after a nice layer of dust had settled on the rig - and with no other radios to work on, I took it off the shelf and began with the basics: cleaning the piece (inside and out), a recap and new power cord. Once I had the confidence that the radio powered up safely, I then tackled the challenge of an antenna.

Now the following comment comes from a long-time marketer: it might have been a trend of the times, but GE really went overboard with the brand names. The radio itself was called a “Musaphonic,” (probably an early positioning against upstart FM which would threaten - and eventually conquer - AM radio’s dominance for broadcasting music.) But the marketers at GE went a step further, even giving the loop antenna its own name: “Beam-O-Scope.” Other models, such as the floor-model combination tuner and phonograph H-77, H-78, and H-79, were equipped with the equally impressively named ‘*Super Beam-O-Scope.*’ (The italics are

theirs, from the Rider Manual, Volume 11.) Other models, such as the pre-war tabletop GE L-740, included another grandly named antenna called the De Luxe Beam-O-Scope.

So what is the “Beam-O-Scope?” The GE220 schematic didn’t elaborate, but in the documentation for GE’s H-7x series it explains that: “The ‘Super Beam-O-Scope’ is essentially a tuned coil antenna wound on a frame and shielded by a Faraday screen against electrostatic disturbances” (Again, looks like the battle against no-static FM has already been joined!) But, marketing aside, this left me without an antenna - one that, as seen in the schematic below, was more than just a few loops of wire; it also included a “pick-up” loop for an external antenna that required a 470 Ω resistor and .002 μF capacitor in series. Furthermore L1, the built-in broadcast antenna (the heart of the Beam-O-Scope) also had a 1.5 – 15pF variable cap in parallel.

The loop antenna is critical, since it is part of the first tuned circuit in the radio (feeding the grid of the 12SK7 RF Amp.) If I were to create a replacement I would have to get within the right range of inductance required for the tuned circuit. Further complicating the task was that there were only four wires coming from the radio, three from under the chassis and one off a variable cap that was tied to the ganged capacitor of the RF detector stage. While researching for other GE220 owners I found this old thread on the Antiqueradios.com forum, one that had been started by another collector with a GE220 and the same issue – no Beam-O-Scope antenna and four wires coming from the radio. The thread included photos of working rigs and one with a list, wire-by-wire, of the five connections from the radio required to the antenna to complete the RF detector circuit.



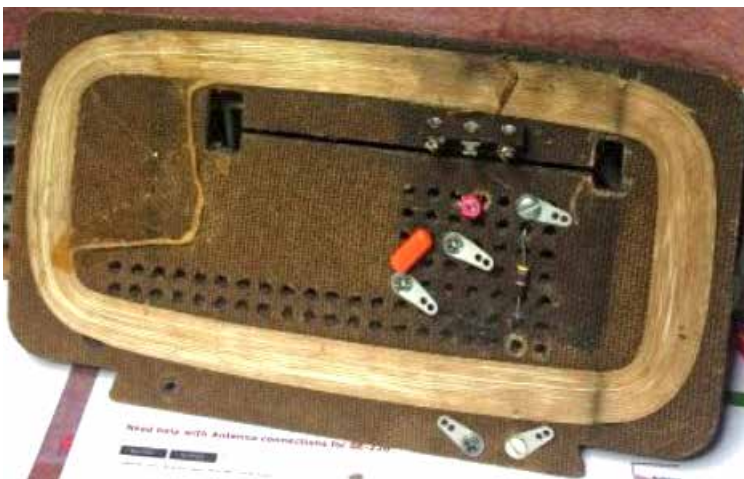
Unable to find someone with an existing Beam-O-Scope to sell, I resigned myself to having to build a replica from scratch. But then I remembered that a few months earlier, at the [New England Antique Radio Club](#) spring flea market, I had spent \$5 on this Philco E-808:



Philco E808-5

“Worth five bucks,” I told myself. “It’s not that nice-looking but I can use it for parts.” When I went to the shelf I was happy to see that the Philco’s loop antenna was there. A quick check with an ohmmeter showed the loop was unbroken (that would have been a bummer) so I began the process of converting it into a Beam-O-Scope.

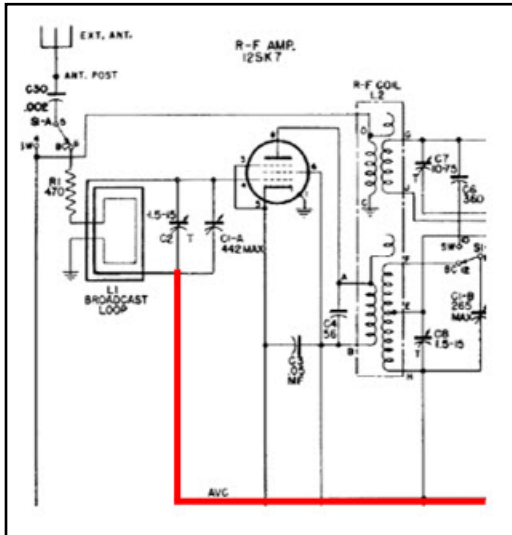
From a picture posted on the [antiqueradios.com](#) thread I counted 25 loops of wire on the Beam-O-Scope. Now, we all know there’s a whole lot of math that goes into the design of a loop so it will collect RF within the broadcast band and at just the right level to feed the grid of RF Amp (in this case a 12SK7.) That math includes many variables, including the number of loops, the width and permeability of the wire and the size of the space in the middle, just to name a few. But, with all due respect to the designer of the “Beam-O-Scope” and associated circuitry- this isn’t rocket science, and I banked that the tolerances were pretty wide and that the 12SK7 would accept signal in a range that the Philco loop, although smaller than the GE’s Beam-O-Scope, would provide. The picture below shows the Philco



antenna soon after the conversion was started, showing the .005uF fixed and 5-15pf variable caps and 470 ohm resistor and connecting lugs that I added. I then laid a single loop of wire around the outside of the main antenna for the pickup loop.

That left just one more connection to be made: that missing fifth wire from the chassis, which the schematic showed going to the side of the main loop with the junction of the 5 – 15pf variable and C1-A (one of the three sets of ganged capacitors in the tuning section.)

I found it interesting that the person who wrote the original post on that forum had a radio that was also missing the fifth connecting wire. A design or manufacturing flaw, perhaps, that induced the wire to come loose? Whatever the reason, it was a simple matter to trace the AVC (Automatic Volume Control) line in the radio, finding what looked like the connecting point, and securing a wire there and to the main loop of the hybrid Beam-O-Scope I had created.



What a treat to have it work the first time, as you can hear and see in this YouTube clip: https://www.youtube.com/watch?v=kooZwRG5C_0. The re-assembled radio now sits in a more public place, on a shelf upstairs in the house. I cannot walk past it without feeling a bit of pride, having channeled Dr. Frankenstein to produce a working radio from the parts of two. It's ALIVE!

This article is from a blog authored by David Kruh and was originally posted on Analog Devices EngineerZone community in [The EngineerZone Spotlight blog](#) on 5 April, 2018. You may find a listing of David Kruh's blogs here: <https://ez.analog.com/search?q=radio#serpauthor=61394&serp=1>
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General Electric Company, Elmira Park, Syracuse, N.Y.



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You can put your confidence in...

GENERAL  ELECTRIC

Vintage 1950 Ad

RADIO ZONE

Radio Cabinet Restoration: Part 1

by Joe Koester

Editors note: This article references products that may no longer be commonly available. Be sure to read, understand and follow instructions for safe use of equipment and chemicals.

When ten people who do radio cabinet restoration get together, there will probably be ten different opinions on what should be done, what shouldn't be done, and how to do it. I don't believe there is any one best way to restore or refinish a radio; there are simply many ways to approach it, so I don't claim my methods are any better (or, hopefully, no worse) than anyone else's. I have seen good cabinet restoration work by a number of my fellow collectors, using a variety of techniques resulting in radios that any collector would be proud to have in a collection. This article documents the methods with which I have had success.

Determination

Of course the first question is whether to opt for just cleaning the radio cabinet, touching it up, or doing a total refinishing job. Most will agree that leaving the original finish is best, if it is of acceptable quality and condition. Sometimes a cabinet that looks as though it will need refinishing will look remarkably good after a thorough cleaning with **Go Jo**, as described below. If you have had limited experience with stripping and refinishing, don't begin by working on your most valuable and rare radio. It takes several attempts for most radio collectors to get the hang of it. Buy a couple of ratty looking \$5 radios at an auction and work on them to hone your techniques. After achieving success with some garden variety sets, then you can feel confident about tackling that special radio that you want to look especially nice.

Clean Up

There are a number of ways to clean a dirty cabinet. My favorite is to go over it with mechanics' waterless hand cleaner - the original white can **Go Jo** - which I always keep on the workbench. This is an old standby and you also end up with clean hands. The **Go Jo** even tends to hide scratches. Put some **Go Jo** on a rag or a paper towel and liberally wipe down the cabinet. (Remove the grillecloth if you can, or place some stiff paper between the grille work and the grillecloth, because **Go Jo** will probably stain the cloth.) For stubborn dirt or a deteriorated finish use a toothbrush to do light scrubbing, and for more difficult conditions, use **Go Jo** on 0000 (extra fine) steel wool. But use gentle pressure and motion or the steel wool will cut through the finish. When finished, wipe the cabinet down with dry paper towels and put it aside for a day or two, and the residue from the **Go Jo** will evaporate. If the cabinet is particularly dirty, you might have to do this twice. If the paper towels appear brown as you wipe off the **Go Jo**, it means dirt is still coming off. **Go Jo** is also excellent for cleaning up chassis and the inside of very dirty cabinets. After cleaning the dirt off the cabinet with **Go Jo**, there are a

number of “restoring” products that you can try to improve the appearance of the finish, as described below. If the cabinet is not that dirty, one of these may be tried as a first step. Or, if the cabinet looks very good after cleaning with *Go Jo*, a coat of wax as described below may be all that is required to finish the job.

Restoring Solutions

There are a number of these solutions available, including my personal favorite, which I call *Slagle Sauce* (equal parts of gum turpentine & boiled linseed oil) in honor of Bob Slagle, who shared the formula. It is important not to let this “sauce” dry. It should be allowed to soak into the finish for 20 - 30 minutes and then wiped dry. Then after an hour or so, wipe it again. This smooths out areas that have different soak rates. Another is *Howard Restor A Finish*, which I believe works like the *Mohawk Amalgamator* and other similar products. Products of this type typically contain a mixture of alcohol and lacquer thinner. They dissolve some of the original finish and move it around to cover damaged areas. In some cases this works quite well; in others it only removes some of scratches, heat rings and watermarks. (There are a number of products on the shelves and it is *not* my intent to explore or comment on all of them, because I have limited or dated experience with a number of them.) *Kramers Antique Restorer* is another popular refinishing product. Its secret formula is probably similar to Slagle Sauce, except that Kramers also contains beeswax, which leaves a shiny finish when it dries. Another old standby for hiding scratches is *Old English Scratch Remover*, which can have limited success on some cabinets. It comes in light or dark tone. Generally speaking, for a scratch in the finish use some matching stain (more follows) to color the damaged wood, and then seal it with wax after the desired color match is achieved. Again the results may or may not be satisfactory depending upon the cabinet and finish, as well as the degree of damage. If you like what you see at this stage, then all that may be needed is a coat of good quality paste wax, as described in the next section. Let the restorer get thoroughly dry before applying a coat of wax, though.

Waxes

My overall favorite wax is *Antiquax*, which probably still comes in a blue can and is a fine combination of carnauba and beeswax. I have also gotten good results with *Briwax* (which I believe still comes in plain and tinted varieties), *Classic Car Wax*, and *Butcher’s Wax*. Fibber McGee and Molly recommended *Johnson’s Paste Wax*, and that works well, too. Follow the directions, but generally apply a light coat and wait a short while before buffing it off with a soft cloth.

Polishes

After layers of dirt have been removed with *Go Jo*, some people recommend using a good quality automobile polish. *Blue Coral* comes to mind. Most of these polishes contain a mild abrasive, will clean the cabinet, and also have a separate agent to shine and protect the finish. Depending upon what you use, you may or may not want to apply wax. For trim or areas that need extra cleaning try

Mother's Mag Polish which is available in auto supply stores. It contains a very fine pumice or polishing agent.

Touch Up Kits

Wood Medic makes a **Handyman's Repair/Touch Up Kit**, which essentially allows you to repair scratches, gouges, scuffs and cigarette burns. It consists of a small container of wood-tone pigment powder, which is mixed with a small amount of shellac and denatured alcohol (small container included), and a second small container of graining powder, which is a much darker pigment. Using the tiny brush provided, you can draw a grain pattern in the wood to match the existing pigment. An easier solution here might be a graining pen. (covered in part two)

Refinishing

It is a good idea to take color photographs of the cabinet before you refinish. You might want to bring the completed radio to a show-and-tell session at your radio club, and having a 'before' picture to compare with the finished product is always nice. Also, once the finish is stripped, you may not be able to recall which trim pieces were lighter and which were darker.

Preparation

When a decision is made to refinish the cabinet, there are several steps to be taken. The order in which they are performed is important. Begin by removing the chassis, speaker, grille cloth, escutcheon, etc., and brush or blow all the dirt from inside the cabinet. (An air compressor is a big help.) I usually do not attempt to re-glue or repair any loose or damaged veneer or cabinetry at this time. Two reasons: first, you won't know the exact color and grain pattern of any damaged or missing veneer until you have removed the old finish. Removal makes for a better match if you must replace some. Secondly, the stripper is harsh, and can loosen some glues, especially recently applied glue. So I repair *after stripping*.

Stripping

There are a number of types of strippers, the most common of which contain methylene chloride. They usually come in two types, an adhering paste and a much thinner liquid. The paste type has the advantage of adhering to the sides of a cabinet as it does its work, rather than running off. That can be helpful when stripping a large console, especially a first coat. In spite of that, I prefer the thinner liquid for most jobs. You might want to purchase both kinds and experiment to see which you like better. Methylene chloride is a hazardous material. There are other strippers that are gentler and more environmentally friendly, but I have had very little experience with them. They tend to take longer to do the job. I have seen demonstrations where a piece of glass was used to scrape off the finish and it worked OK, but not on curved surfaces, and there is the possibility of scratching or gouging the veneer with the glass if you aren't careful. So, I prefer a liquid stripper and steel wool. Get a pair of good fitting rubber gloves. The thin rubber gloves sold in grocery stores for dish washing are *just not adequate*. Buy

heavy-duty rubber gloves designed for handling hazardous chemicals, available at a good hardware or industrial supply store. You will also need a small can for the stripper (cat food size is great), a paint brush of about 1-inch width, an old toothbrush, one of the small brass brushes designed for paint stripping, a plastic paint scraper, a dental pick, an old credit card, some paper towels, a pack of extra fine steel wool (0000), and some clean rags. Because of the hazardous chemicals involved, do this outside where there is good ventilation. If you don't want to stain your driveway, get a large plastic tub or a heavy plastic sheet to catch the drips. It might be good to wear goggles in case you splash some stripper in your eyes.

Application: Apply the stripper to one area of the radio at a time. Don't slop it all over because it will run, and sometimes the run marks will show where the stripper went over the edge and down the side and was allowed to dry, rather than being worked to remove the finish. If you do get a run, immediately wipe it off with a towel or rag. On a console I usually do one side at a time, being careful to keep the stripper confined only to that one side. Then I do the top and front, the base, and whatever else is needed. Apply the stripper, following the directions on the can and test it with the paint scraper. When the finish loosens, the idea is to remove as much of it as possible with the flat paint scraper and deposit the old finish on a paper towel. (You'll use a lot of paper towels!) Use the credit card to get into tight places. At this point the goal is to remove the majority of the old finish, so don't worry about small patches or tight places. Usually you will apply a second coat after you have initially worked one coat into the radio.

Interim Cleansing

The next step is to put some clean stripper in the little can and apply it to a small area. Dip the steel wool in the stripper and gently work the remaining residue loose from the radio. For stubborn spots or hard to reach places, use the toothbrush, brass brush, and even the dental pick in small crevices. Be careful with the dental pick - it can easily scratch the wood and damage the veneer.

Wipe Down

Take more fresh stripper, dip a clean rag (old T-shirts are great), and wipe down the entire radio. You can easily see how much residue (stain, wood filler, lacquer, dirt, etc.) you are removing on the white T-shirt. Do this several times until the rag is generally clean and all the old finish is gone. Now, set the cabinet aside and let it dry out and breathe for a day. Stripper can loosen up glue joints and veneer, particularly if they were not secure before you started, so make a list of any spots that need to be re-glued. (More on that later.) When you have finished stripping, take all the old towels, rags and residue and dispose of them carefully. This residue is highly flammable! Don't *ever* keep such materials in the house or you risk unintentional ignition and fire. A pile of solvent-soaked rags can *easily* lead to spontaneous combustion. One approach: on a sunny day with little wind, you can lay the rags and towels out on the grass. After a few hours, most of the solvents will have evaporated, reducing the danger of spontaneous combustion

when you put the rags and paper towels in the trash.

Examination

Now take a good look and see what steps remain. Did you remember to make a diagram or take a picture showing the variations in trim finishes? You should always strive to determine precisely what the original finish looked like so you can attempt to return the cabinet to near original condition. If you can find a color photo of the radio in original condition, or if you have a friend with the same radio in good condition, that will help you determine whether, for example, the vertical trim pieces were originally dark or medium brown or black. And, what about the base? It is usually black or very dark. There is frequently a piece of trim around the top of the cabinet that is a contrasting color. Getting the colors right on the toning and detailing of the trim has a major impact on how authentic the finished product will look (see below).

Repair

Most vintage radio cabinets will have loose joints, trim pieces, bases, loose or missing glue blocks, and damaged or missing veneer. All are repairable. The first step is to secure the cabinet by re-gluing all loose joints. I use a good grade carpenter's glue and use a thin metal strip and an Exacto knife to work glue into joints. I also keep on hand a couple of thin pieces of aluminum cut from a roll of fascia and soffit material, and one or two of the blanks used to cover expansion access points in old computers. These are handy for inserting between the clamp and the piece being reglued. Even a piece of veneer will work well, but be alert that no portion of it dislodges under the veneer you are attempting to secure or there will be a bump under the veneer!

Securing Voids

Sometimes you find a cavity, a chunk or piece of wood missing, or perhaps a space or void between two otherwise sound cabinet joints. Rather than just fill the void or crack with glue, make it stronger and more secure. Take a mixture of common sawdust from the shop and mix it with your woodworker's glue. Strive for an easy-to-work-with consistency; not too dry, and not overly runny. Force the material into the cracks or voids and pack it in with a small putty knife or an old disposable popsicle stick.



Securing a loose joint in the base of a cabinet. Force the glue/sawdust mixture in with a thin tool

For a deep hole in, say, a cabinet base, drive a few small nails or screws in the void to reinforce it before adding your repair material. Do not quite fill it to the surface. If it is a large void, fill it in two or more steps. It will dry more quickly if it is not too thick, but succeeding coats will work well. When it is dry (and it may take a couple of days before a thick patch is completely dry), fill the remaining small void with regular wood filler. Remember not to use the sawdust/glue to fill right up to the surface. Leave room for your plastic wood or other wood filler that can accept stain! The glue and sawdust mixture will not take stain; the wood filler will.

Filling Holes

Wood fillers such as *Plastic Wood* are easy to work with and can fill nail holes, very small voids where veneer is missing, cracks, seams, etc. *Plastic Wood* is soluble with acetone. You can reclaim a dry can of filler or thin a hunk of filler so that you can literally paint over a small void. Most wood filler products come in a natural finish or come tinted with colors such as walnut, mahogany, or oak. Try an experiment on a scrap piece of wood with the wood filler and stain you intend to use to ensure that the filler will accept stain, or you might have a light spot that shows up like a blinking light. I particularly like a brand of wood filler called *Wunderfil*. It is exceptionally easy to apply as its base material is very fine. It sands and takes stain exceptionally well. It covered all the veneer repair cracks and joints in a Philco 90 speaker grille repair.

Types of Clamps

Work the glue into one area of repair at a time and use clamps to pull it all together. To do cabinet work successfully, you must have a big assortment of different sizes and types of clamps. There are a number of good clamps on the market, and you can never have too many. The big spring clamps sold by home centers, plastic with about a bite of 1 or 2 inches, are inexpensive and work well. A variety of steel C-clamps is handy to have, and can apply the greatest pressure when needed. Large wooden woodworker's clamps can help in some situations. Pipe clamps are a necessity. These come in two pieces screwed onto a ½-inch or ¾-inch piece of threaded galvanized water pipe or black gas pipe. Be sure to buy a couple of pipe couplings and a couple of extra sections of pipe to extend the clamps for the occasions when you need to clamp a console cabinet from side to side or top to bottom. (The pipe sections should be threaded on both ends if you intend to extend the clamp.) In recent years a clamp with a pistol grip has appeared, and I find these invaluable. You will need several of these with a 12-inch capacity and a couple with even greater distance. These are among the easiest of the larger clamps to use. They come in small versions, too. One of my absolute favorites is the *Pony Band Clamp*. It consists of a long piece of strap and a securing block with a ratchet. The strap clamp can be used on curved surfaces, can wrap an entire console, and can easily be used to hold down a repair in the middle of a flat expanse of cabinet (like the middle of a console side) when nothing else will fit. Just put a piece of wood directly over the repair area and ratchet it down tight, using the strap. Sometimes extra wood is needed and you can move the ratchet



To repair a console cabinet like this one, you need an assortment of clamps.

to a different area to get a better bite and more pressure. An alternative is a heavy weight right over the repair. That will work well in some situations.

Glue Blocks

Most radios have a series of glue blocks, which are simply small blocks of wood glued in place in areas of the radio cabinet needing additional support. Consoles usually have a few under the shelf holding the chassis, and down on the base helping secure the lower part of the radio. Glue blocks are nearly always found along curved surfaces (cathedral arches, especially) to provide necessary support and cabinet rigidity. Sometimes these are loose or missing. Glue them back in place and replace missing ones. The manufacturer put these blocks there for a reason!

Wax Paper

Remember that most glues will *not* take a stain, so you don't want glue on surfaces to be stained. Assuming you are using a wood block or small piece of plywood underneath the clamp to apply pressure to the repair area, be sure to put a piece of wax paper between the block and the repair surface. If you don't, most likely some glue will seep from the joint and will glue the wood block to the cabinet. After applying the glue, position the block and clamp and give it a preliminary tightening. Then back off to see what has happened. If it was positioned properly, you will probably see some glue squeezed out of the joint or repair site. (Glue oozing out means there should be sufficient glue in the repair site to secure it

adequately.) Use a damp paper towel to remove as much of this excess glue as you can, and replace the wax paper, with a fresh sheet, if necessary.

Veneer Repair

This can be one of the most daunting and intimidating aspects of cabinet repair, and it really need not be. I've included pictures showing a small veneer replacement job, a larger one on a Zenith 9-S-262 console, and a complete re-veneering of a Philco 90 cathedral.

New Veneer

New veneer is definitely easier to work with than salvaged, used veneer. A rolled-up sheet of good quality walnut veneer measuring two feet by eight feet can be purchased at a woodworking shop for about \$55. There are many benefits of using new veneer: it is clean, solid, has matching grain patterns, and has a backing that will keep it from splitting and separating when you cut it or bend it. When you are cutting new veneer (or any veneer for that matter), use a T-square and cut a very straight and clean edge. Clean cuts will make butting pieces or matching so much easier: for example, for a repair like a new top or side on a cabinet, or the arched top of a cathedral. There is a possible disadvantage to veneer with backing. That occurs in situations where you are piecing in a repair and find the new veneer is thicker than the original, which happens quite often. One of the thinnest veneers I ever encountered was on an 18-tube Midwest console. It was paper thin, about half the thickness of normal veneer. In fact, it was so thin that the factory had sanded through a spot on the side before the final finish had been applied to the radio, and the flaw had been disguised.

Repairing an Entire Surface

I put a new top on a Kennedy L-61 console and was quite pleased with the results. (See *Radio Age*, October 2007, p. 9.) The top of the cabinet had some little curves that were tricky. But by following the methods below, the job was doable. First, remove any old remaining veneer. One of the easiest ways is to use a heat gun. Places like *Harbor Freight* sell heat guns for about \$20, and they are also excellent for shrinking the heat-shrink tubing used in chassis repair much better than the old soldering iron! Get a couple of metal paint scrapers or drywall knives of different width. Insert the scraper under the edge of the veneer as you apply heat. Often the veneer will peel off in one piece. Save it! That veneer can be used for repairing other radios. (You can never have too much veneer.) Once the veneer is off, sand the surface to remove any traces of old veneer, as well as glue residue. I like 100 grit sandpaper because it levels the surface nicely and leaves it rough enough for glue adhesion. A perfectly smooth finish is not necessary, so stay away from 220 or 320 grit. If the surface has indentations or holes, these must be filled with good quality wood filler (like *Plastic Wood*) and sanded smooth, or the indention or imperfection might show from beneath the new veneer. Cut the veneer slightly larger than the piece needed. I usually cut mine $\frac{1}{4}$ to $\frac{1}{2}$ inch larger than the piece to be repaired. If you are a beginner, start with a $\frac{1}{2}$ -inch extra border. It is easier

to trim off excess than to deal with a piece that turns out to be a tiny bit too small. Before you cut the veneer look at the old veneer you have removed to make sure the grain in the replacement is running in the same direction as the original. Now, thoroughly dust the surface to be glued (the air compressor works great here) and choose your glue. For most of my repairs I use *Woodworker's Glue*. On the Kennedy L-61 I applied this glue to the veneer, placed it on the top of the cabinet, applied pressure, and smoothed it out. Then I carefully *removed* the veneer to look for places on either surface where the glue was missing or did not adhere properly. I applied more glue in the area of these voids and smoothed it around with my finger. You can also use a small straight edge to level the glue. Now place the veneer back on the cabinet and position it so that a little extra is sticking over the edge. If there is one long straight edge, like the back of the cabinet, line up the new veneer with that edge and you might not have to trim it on that edge. But glue will ooze out and will have to be cleaned, so you can probably leave a small overlap all around. With the veneer in place it is essential that the new veneer be bonded solidly to the old surface. I use a small roller with a handle and roll it across the entire piece, both with the grain and against the grain. Work from the center out. In the case of the viscous *Woodworker's Glue* this forces the excess glue and any air bubbles toward the outside edge. You can also use a flat metal paint scraper or drywall knife (keep a 1 inch, 2 inch, and 4 or 6 inch scraper in your shop) and draw it across the veneer at a 45-degree angle to help compress any voids and move excess glue away. By this time several minutes will have elapsed. Remove any excess glue that has oozed out along the edge. But don't compromise the edges by pulling on them or you will have glue to clean up later. Now you must, in the case of *Woodworker's Glue*, clamp the veneer to the cabinet. Again I use the Kennedy L-61 as an example. I used a piece of 3/4-inch plywood slightly larger than the cabinet top and used four pipe clamps to secure it. This large surface required uniform pressure throughout, and the 3/4-inch plywood was sufficiently thick and strong to remain completely flat. A thinner wood might have bowed in the middle and resulted in a section of unsecured veneer. Had that happened it might have been possible to reattach the glue afterwards using an iron set to a medium to high heat. Use a thin cloth between the iron and the veneer and *keep the iron moving* to avoid scorching the veneer. A bubble in a sheet of veneer can sometimes be repaired by making small slits in the veneer and injecting glue, but if it is done right, that's not necessary. Be sure to use little wood blocks under the other end of the pipe clamps to keep from damaging anything as you tighten them.

Wood Blocks and Strips

As an aside, you can never have too many small wood scraps when gluing cabinets. I have pieces of 1/4-inch plywood one to four inches long, two by four inches, some longer strips, and varying sizes of 3/4-inch lumber (several pieces of varying lengths of 1x2, 1x3, or 1x4 lumber are great). I use a lot of paint stirrers and small smooth molding similar to screen door molding. The stirrers and molding and plywood will bend to conform to curved surfaces (like a cathedral) and can be invaluable in gluing these surfaces. Don't forget the wax paper where applicable

Trimming and Clean Up

Now that the clamps and blocks have been removed and the veneer is solidly affixed to the cabinet, it is time to trim the edges and remove the excess glue. The latter can be tedious. Take your time or you can create additional problems. I use a new and very sharp Exacto knife, occasionally a veneer cutter, and sandpaper. Replacement Exacto knife blades are cheap when bought in quantity. A dull blade can lead to sloppy cuts and a botched job, so *use a new blade*. Remember that veneer is harder to cut across the grain. Make multiple cuts rather than trying to cut through with brute force in a single pass. Veneer cuts will tend to follow the grain, sometimes going off at an angle where the cut is not intended to go. So cut slowly, with multiple cuts in the same groove. In trimming excess veneer I generally leave about 1/8 inch of border because it can easily be sanded down. Use medium grit sandpaper (150-grit) and use a sanding block or a piece of wood behind it, and carefully sand the edge of the veneer, keeping the sandpaper perpendicular to the veneer. If you sand at an angle with this grit you can bevel the edge and remove too much veneer on the top surface. As the sanding process approaches the edge, you will notice a thin layer of residue next to the edge. Surprise! It is the last vestiges of the glue. It must be removed before stain can be applied. Remember, stain will not take to most glues. There are some new glues that are purported to accept stain, but I have not used them. The sandpaper has probably removed about all the glue that it will, and additional sanding at this time is likely to remove more veneer edge than desirable. Very carefully use the Exacto knife, and scrape and pick at the glue. A very slight cut along the glue line will often give the purchase necessary to strip away that thin layer of glue. Continue this process all along the edge and remove the remaining glue. When finished, sand the newly veneered surface lightly with 150 grit, and then 220, and finally, 340 or 400 grit paper. Do the same to the edges, and everything should be smooth and ready for staining. This procedure is the one I used with success on my Kennedy L-61. Now let's consider another task replacing a large piece of veneer on a totally different type of cabinet.

Re-veneering a Cathedral

The procedures and techniques are much the same as with the Kennedy, but a cathedral poses a few other challenges. We'll use another type of glue on the example here, a Philco Model 90. One of the things I found that made working with the cabinet much easier during the re-veneering process was to screw the base to the workbench. I used two inch drywall screws and big washers and went through two of the four holes in the cabinet base that are used to secure the chassis to the cabinet. Large C-clamps might have worked, too. I have two Model 90s, one in fair to good condition (it probably needs to be refinished), with new molding around the base that needs to be finished. The other 90 was in bad shape. About a quarter of the veneer was missing on the top/side and the remainder was loose. And, the wood arch at the back of the cabinet was missing. I stripped the set and thought originally that I would repair the veneer, but the glue had lost much of its adhesion. A lot of the veneer would have to be re-glued, and there was a great deal

of old glue residue under it. Part of the grille was also broken. So I chose to re-veneer the cabinet.

Arch Replacement

I first tried to trace the arch from the other Philco 90 in place, but eventually decided to remove it. Because it was loose in about half its area, I used paint scrapers to separate much of the remaining joint, and slipped a hacksaw



The arch at the top rear of this Philco 90 cabinet needed to be replaced.

blade in to cut the half dozen nails holding the top to the arch. I then made a pattern of the arch from a piece of heavy cardboard and made certain it would fit the other cabinet. I bought a piece of furniture-grade plywood from Home Depot (about \$7 for a two-foot square piece enough for several arches). After cutting it out I sanded the edge with a belt sander to smooth it. I might add that when I transferred the arch pattern to the plywood I made the two tails, or lower edges, slightly wider and longer than the pattern to allow for any variations between the cabinets. That turned out to be a good idea. The sub-veneer was composed of two layers, and there was a split at the back that needed to be repaired when the arch was installed. I tried the arch in the cabinet under repair, and, of course, it was not a perfect fit. I got one end (or tail) to fit close to the existing side support on the cabinet and clamped it in place. Then I worked up the cabinet, applying clamps every so often. When I reached the other tail I was able to mark it for a tight fit, and removed it for trimming. Replacing the arch and testing again, I was able to glue it in, applying glue to one surface, fitting, removing, and applying more glue where needed. Starting at one side I clamped the arch and moved around the circumference of the cabinet applying clamps as I went. I also repaired the split sub-veneer, temporarily clamping it in place. When it all fit I drove a half-dozen small nails through the sub-veneer (counter-sink them when the glue is dry and fill the holes), and secured the arch. I then removed one clamp at a time and placed blocks of wood under them to spread the pressure of the clamp over a wider area. On the curve a paint stirrer was sufficiently flexible to clamp at one end, and I moved up along the curve, clamping in several places to spread the pressure. Twenty-four hours later the clamps were removed and the cabinet was much sturdier. Now that half the cabinet was secured and repaired I still had the front of



In the above photo the replacement arch is being fastened to the top of the cabinet.



The replacement arch is now firmly attached to the top of the cabinet, using tiny nails through the sub-veneer.

the cabinet to deal with. Using a mallet and a block of wood, I drove the cathedral front loose from the sides and top, leaving it attached at the bottom, by three nails.

Veneering the Cabinet

I carefully sanded the entire cabinet, removing the old glue residue. I used 100-150 grit sandpaper, remembering that a smooth surface is not necessary, but rather, makes a good base to secure the glue. After I wiped and blew all the dust off, it was ready to veneer.

A Different Glue

Because I was dealing with a large area involving a significantly curved shape, I



Here I am beginning to attach the new veneer to the top of the cabinet.

I anticipated that it would be difficult to apply clamp pressure over such an area. Accordingly, Woodworker's Glue would not be a good choice. I purchased a small can of **Weldwood Contact Cement** for this job. With this adhesive both surfaces get coated, and are allowed to dry before the two surfaces are mated. (A similar type of glue is used to install new grille cloth.) Once the two surfaces touch, they are very difficult to separate. I had a bad experience with this type of glue years ago when I was reattaching piece of veneer to an E. H. Scott Warrington cabinet. That piece of veneer ran from top to bottom on the front of the cabinet and was about four or five inches wide. I started at one end and I was off a quarter inch at the other. I had to destroy the veneer to get it off. This meant two new pieces of matching veneer on this cabinet front and a lot more work! On the Philco 90, observing the former grain direction, I cut a piece of veneer a little over 11 inches wide and 24 inches long. I found and marked the center-point at the front of the cabinet and marked a corresponding point on the veneer so that I'd have an approximately equal area on both sides to veneer with two more pieces. I cut three pieces of wax paper as deep as the cabinet. One piece, about three inches wide was on the very top of the cabinet, and two large pieces, barely under the edge of the top piece, continued down the sides. You will need help to get this veneer on the radio properly. One person can hold it in place while the other positions it and rolls the veneer onto the cabinet. We placed the veneer on the top, matching the center points, and made sure it was either even with the front of the cabinet or extended just beyond it. Then, in the moment of truth, we removed the small piece of wax paper and

applied pressure to the veneer. We rolled the veneer with the roller and the paint scraper blades and slowly removed the wax paper from one side while rolling, pressuring, and scraping the new veneer as we went. Then, the same on the other side, and the big piece was on. The two lower pieces were applied the same way, and it looked good! Meanwhile, we still had to deal with the cabinet front that was attached only at the very bottom



Rolling the veneer to eliminate air bubbles between the glue and the veneer and ensure a tight bond.

with three nails. I neglected to mention that I removed the three base trim pieces from the cabinet - the veneer goes under the two side pieces. So, the front was carefully removed, the veneer edge was sanded on the front, and the excess veneer was trimmed and sanded from the rear. The front of this cathedral has a groove cut in it, into which the cabinet sides fit. There was a good deal of old glue remaining in the groove, plus some old veneer scraps. A few passes with a Dremel tool using a small cutting blade like a dentist's drill made fast work of this, and then the groove was sanded and blown clean.



Trimming the excess veneer from the rear of the cabinet.

Assembly

This was a time consuming chore. I dryfitted the front to the rest of the cabinet several times to ensure a good fit. Because I had used new veneer, it was slightly thicker, and did not everywhere fit nicely in the groove in the cabinet front. I

sanded the inside of the front edge of the cabinet to thin it, and got a good fit. After applying glue to the mating surfaces, I fastened clamps around the radio and watched for glue seepage, removing it with a paper towel as it appeared. Then I repositioned the clamps, starting at the bottom, and worked my way back to the top. By applying even pressure it came together well. Since I intentionally placed most of the glue on the *inside* edge of the front's groove, it seeped down *inside* the cabinet rather than oozing onto the new veneer. I removed the clamps the next day and the old Philco was rock solid.



Reattaching the front. For this operation, lots of clamps are required.

Repairing the Grille

In this example two parts of the grille were damaged. The under-layment or sub-veneer, as well as the actual veneer, were missing in spots. First, I had to re-glue the delaminated grille pieces together and achieve a stable grille before I put the final veneer on. In my scrap box I found pieces of sub-veneer that were the right thickness and held them over the front of the grille while outlining the shape on the backside with a pencil. Using scissors, I trimmed the new under-layment to a close size, cut it in to match the existing under-layment at either end, then glued and clamped it in place. Some hours later I repeated this process using some of the Philco 90 veneer salvaged from the top. It was somewhat bigger than needed. I used my trusty Dremel tool with a rotary sanding disc to trim it to size. When using the Dremel, use the lowest possible speed (mine has a variable speed control) and clean the grille pieces lightly, removing old glue residue, excess sub-veneer and a small amount of the new veneer. Then use a piece of 150-grit sandpaper to shape



Repairing the grille. Here again, it is essential to have enough small clamps on hand.

it to the proper contour. If the glue joint was off on the sub-veneer, add a little wood filler (not grain filler) to restore the original contour. After getting close, use 240-grit paper to smooth to the final shape. Also finger in a small amount of wood filler in the veneer joints on the grille so that when it is sanded down, it is perfectly smooth with no voids.

Using Old Veneer

By this I mean veneer removed from an old radio cabinet a valuable source of repair veneer. The more veneer scraps you have available, the better the chance of getting a good grain match and cutting a piece in to replace a damaged section. Also, recycled veneer comes in many different thicknesses and that provides more options. Years ago I wrote an article on veneering for the *MAARC Newsletter* entitled *Fear of Veneer Part One*; however, Part Two was never completed. In that article I mentioned using the bathtub and warm water to soak veneer overnight and remove it from the underlying wood. That does make the bottom of the bathtub both slippery and sticky and may leave stains to be scrubbed off. So, other options may be better. I have left old consoles in the back yard in the rain, but the neighbors might not appreciate that either. Regardless of where and how you obtain old veneer, it is invaluable.

Zenith 9-S-262 Repair

I got this cabinet (less radio and speaker) at the AWA Meet in Charlotte in 2009.

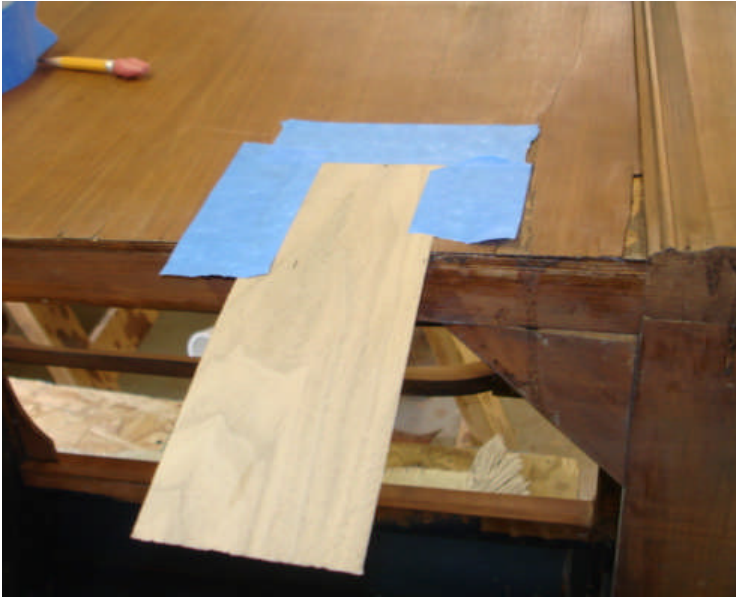
Since I had a Zenith chassis and speaker, this was what the doctor ordered, especially since it was a tight cabinet at a fair price. It was basically a sound cabinet that had been stripped and some loose veneer re-glued on the bottom sides, but it had several medium-sized pieces of veneer missing. The cabinet had also a light coating of clear finish, probably lacquer. After stripping it and cleaning it, I glued the loose veneer and joints and set about using some old veneer and some new veneer to replace the damaged areas. On one side there was a piece missing, about an inch wide and nearly two inches long. I found a piece of used veneer (from the Philco 90) with a similar grain pattern and chose it for this repair. I first marked the approximate limits of the damaged area on the cabinet with a pencil to know how far I had to cut in the new veneer. Then I taped the new veneer over the damaged area on all three sides with the good old blue masking tape. Using an Exacto knife with a new and very sharp blade, I started at the furthest point in from the back and cut an irregular and somewhat triangular piece of veneer, cutting through both pieces of veneer, the new piece and the one beneath it. I repeated it on the other side, making the cut irregular in an attempt to simulate natural grain patterns. Never cut a square patch of veneer it will stand out like a sore thumb. After removing all the tape and the new patch, I removed the old veneer under the cut. Carefully using the knife point to clean near the limits of the cut, I then sanded and scraped the glue residue and fitted the patch. It was nearly a perfect fit, and with a light touch of sandpaper to one area, it fit perfectly. I applied the glue, wiped it off, removed the patch, added a touch more glue, applied pressure, wiped off the excess, placed the wax paper and the wood block, clamped, and waited. This turned out to be an excellent patch, barely visible. The two areas on the other side were done the same way, but with new veneer. The procedures were identical, but I ended up with virgin never-stained veneer that really stood out. One more little patch on the bottom used old veneer that was too thin so two pieces of veneer were put in the



This Zenith cabinet needed veneer patches. Here I apply a piece of scrap veneer larger than the damaged area and then cut through both pieces with the Exacto knife..

void, one on top of the other. Obviously the original veneer was joined at several places on the cabinet. Along one junction I found a spot where the veneer was starting to lift off. I

carefully placed some glue under both sides with my thin metal strip and Exacto knife. Pressure was supplied to force out excess glue, it was wiped down, and wax paper, wood block, and the Pony Band Clamp tightly secured this repair



When cutting a patch, tape a piece of scrap veneer over the damaged spot that is larger than the area to be patched, and cut through both the new veneer and the old veneer underneath. Always make triangular patches--never rectangular ones.



These veneer patches show now, but when the cabinet is restrained and a graining pen is used, they will blend in well.

in the middle of the side. More veneer was loose along the very bottom of the cabinet, and an application of glue, wax paper, wooden block and the band clamp fixed that, too. When these steps were completed, I checked the joints around the patches and carefully removed any residual glue. I took dark wood filler that was thinned (add some Acetone to thin it) and worked it into the joint. After drying it was sanded smooth, and the entire cabinet was sanded lightly with 150-grit and then 320 grit sandpaper. The cabinet was now ready for staining.
[To Be Continued in Part 2]

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About The Cover

The Radio Boys First Wireless or, *Winning The Ferberton Prize - 1922*

A captivating tale, showing how several boys of a small town became interested in radiophoning and set about making their own receiving apparatus. They had, of course, a number of rivals, and when a rich man of that vicinity offered a prize for the best made amateur set, their rivals did what they could to bring their hard work to naught, even going so far as to make off with the apparatus that was to be placed in the competition.

The story gives many directions for building a small wireless receiving set, and also tells of radio work in general, how airships and other vessels have been guided by wireless, how even an automobile has been steered by radio, and how the Government traces an unlicensed sending station.

A book any boy will read with avidity-many a grown person will also want to dip into it.

There were at least three different *Radio Boys* series running from 1922 to 1931 as well as a four volume *Radio Girls* series by Margaret Penrose from 1922 to 1924. The most popular was arguably the Stratemeyer Syndicate's thirteen volume series by Allen Chapman from 1922 to 1930. Journalist Gerald Breckenridge wrote a 10 volume Radio Boys series that ran from 1922 to 1931. J.W. Duffield / Wayne Whipple & S.F. Aaron penned a six volume Radio Boys series from 1922 to 1923, which reprinted the two volume *Bill Brown* series as its final volumes.

Published by Grosset & Dunlap, illustrated by Walter S. Rogers, most of the volumes were written by John W. Duffield

"Here is a series that gives full details of radio work both in sending and receiving-how large and small sets can be made and operated, and with this real information there are stories about the Radio Boys and their adventures. Each story is a record of thrilling adventures--rescues, narrow escapes from death, daring exploits in which radio play a main part. Each volume is so thoroughly fascinating, so strictly up-to-date, and accurate that all modern boys will peruse them with delight. Each volume has a forward by Jack Binns, the well known radio expert." - Grosset & Dunlap advertisement.

Who is Jack Binns? Over a century ago, New York held a parade to honor Jack Binns, the 24-year-old British wireless operator of the White Star liner Republic, whose quick thinking and persistence helped save scores of lives when the liner was rammed by a cargo ship in the freezing water off the coast of Nantucket on the early morning of January 23, 1909. Binns continued to work as a radio operator until 1912, when he turned down an assignment on the ill-fated Titanic, after which he took up a career in journalism and writing forewords to the Radio Boys series for Edward Stratemeyer.



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