WOOD RADIO CABINET RESTORATION

PART ONE: CLEANING, STRIPPING AND CABINET REPAIR

BY JOE KOESTER

A SUCCESSFUL APPROACH (BUT NOT THE ONLY WAY TO DO IT)

- This is the first of a series of presentations based on my two articles published originally in *Radio Age in 2009* and most recently reprinted in the August 2021, *ARCI NEWS*
- I have refinished many radios over the years, and this is an approach that has evolved to be successful for me
- There are other techniques that work well too!
- Hopefully you can use these methods in your radio cabinet restoration

FIRST QUESTION: CLEAN IT UP, TOUCH IT UP, OR COMPLETE RESTORE?

- Most 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.
- Start with some ratty looking $5 radios from an auction and hone your techniques

CLEANING AND RESTORING THE FINISH --- WITHOUT STRIPPING

Sometimes just removing the dirt and scratches makes it look great!

CLEANING UP THE OLD FINISH- USING GO JO (FIRST STEPS)

- My favorite is mechanics' waterless hand cleaner —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. Go Jo even tends to hide scratches.
- Put Go Jo on a rag or paper towel and liberally wipe down the cabinet. (Remove the grille cloth if you can, or place some stiff paper between the grille work and the grille cloth, 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 with 0000 (extra fine) steel wool. But use gentle pressure and motion or the steel wool will cut through the finish.

CLEANING UP THE OLD FINISH- USING GO JO (LAST STEPS)

- 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.
- If the cabinet looks very good at this point a coat of wax as described in an upcoming slide may be all that is required to finish the job.
- Or there are a number of "restoring" products to try to improve the appearance of the finish, as described next.

RESTORING SOLUTIONS
(THERE ARE MANY, HERE ARE ONLY A FEW)

- My favorite 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.
- Kramer's Antique Restorer is another popular product. Its secret formula is probably similar to Slagle Sauce, except that Kramer's also contains beeswax, which leaves a shiny finish when it dries.
- 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.

Restoring Solutions

RESTORING SOLUTIONS (MORE…)

- For just hiding scratches, Old English Scratch Remover can be used, this 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 (covered later) 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 slides.
- Let the restorer get thoroughly dry before applying a coat of wax, though.

WAXES, POLISHES AND TOUCH-UP KITS
(FIRST THE 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.

Some Waxes


A SENSE OF TRADITION
Antiquax
ORIGINAL
WAX POLISH
A WAX POLISH
OF THE HIGHEST QUALITY
FOR ALL FINE FURNITURE
MADE IN ENGLAND
MADE IN ENGLAND


The Original Formula
SC Johnson
PASTE WAX


the natural wax
BRIWAX
ORIGINAL
CLEANS, STAINS AND POLISHES
CLEAR

WAXES, POLISHES AND TOUCH-UP KITS
(SOME POLISHES…)

- After layers of dirt have been removed with Go Jo, some recommend using a good quality automobile polish. Blue Coral comes to mind.
- Most of these polishes contain a mild abrasive that 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 a separate 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.

WAXES, POLISHES AND TOUCH-UP KITS
---- JUST TOUCH IT UP

- Wood Medic makes a Handyman's Repair/Touch Up Kit, which 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 later)

REFINISHING ---STARTS WITH STRIPPING

When you can't just clean up the old finish, its time for a completely new one

REFINISHING

---- PREPARATION BEFORE STRIPPING

- Take some photos first. Its helpful to record original color scheme, and to have a "before" picture" for when you are done.
- Begin by removing the chassis, speaker, grille cloth, escutcheon, etc. and brush or blow all dirt from inside the cabinet. (air compressor is a big help.)
- Don't reglue or repair at this time before stripping
  - 1) You won't know exact color of missing or damaged veneer area until stripped; you can get a better color match for the replacement veneer after stripping.
  - 2) The stripper is harsh and may remove recently applied glue

STRIPPING

---- CHEMICAL STRIPPING IS PREFERRED

- Mechanical scrapers (metal, glass) are not preferred, they are not good for curves and may damage the wood.
- Methylene Chloride Stripper used to be common but has been banned by the EPA. Other strong types are available. They come in an adhering paste or runnier liquid. I prefer the liquid and steel wool.
- Other gentler and more environmentally friendly strippers just don't work as well, and take longer.
- The stripper is **hazardous**, you **must** use heavy duty rubber stripping gloves and work outside where the ventilation is good. Use goggles! Protect the floor or driveway from drips.
- Other supplies: small can for stripper (cat food size), a 1" wide paint brush , an old toothbrush, small brass brush designed for paint stripping, plastic paint scraper, a dental pick, an old credit card, some paper towels, extra fine steel wool (0000), and some clean rags.

STRIPPING

---- INITIAL APPLICATION AND REMOVAL

- Apply the stripper to one area or side 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.
- Immediately wipe off any runs down a side that you are not working on.
- 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.
- 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.

STRIPPING

---- 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.

STRIPPING

---- WIPE DOWN WITH STRIPPER, AND WASTE DISPOSAL

- Take more fresh stripper, dip a clean white rag, 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 rag
- 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.
- Disposal: 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.

TIME TO REPAIR

---- USING GLUE TO FIX IT

- 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. Use a good grade wood 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 metal blanks used to cover expansion access points in old computers. These are handy for inserting between the clamp and the piece being reglued.
- Glue back any loose glue blocks or fabricate and replace any missing ones. These are important for the strength of the cabinet.

REPAIRING VOIDS
---- MORE THAN GLUE NEEDED

- Use a mixture of common sawdust from the shop mixed with wood glue to repair voids and large cracks
- Force the material into the voids and pack it in with a small putty knife or a popsicle stick. (See photo next slide)
- For a deep hole in, say, a cabinet base, drive a few small nails or screws in the void to reinforce it before adding the repair material.
- If it is a large void, fill it in two or more steps.
- Do not quite fill it to the surface …fill the remaining small void with regular wood filler that can accept wood stain. (the glue and sawdust mixture will not accept stain!)

Repairing Voids

FILLING HOLES
---- WOOD FILLERS OF ALL KINDS ARE AVAILABLE

- Wood fillers 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 (stainable) finish or come tinted with colors such as walnut, mahogany, or oak
- Always test 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.

Wood Fillers

An assortment of clamps is needed

CLAMPS ARE ESSENTIAL

---- DIFFERENT TYPES AND SIZES,…YOU CAN NEVER HAVE TOO MANY

- Spring Clamps- 1” or 2” inch bite: are quick and simple to use
- C-Clamps- get the most force in a small area
- Woodworkers type and pistol grip type- all around versatility
- Pipe Clamps- you can make 3 or 4 feet long-essential for large consoles
- Pony Band Clamp- my favorite- a band (strap) and a ratchet together – great for curved surfaces and consoles

Clamps

WAX PAPER

---- A MUST WHEN USING CLAMPS

- Remember that most glues will not take a stain, so you don't want glue on surfaces to be stained. Wax paper helps prevent this.
- When using a piece of flat wood underneath the clamp applying pressure to the repair area, put a piece of wax paper between the wood block and the repair surface. If you don't, 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.

END OF PART ONE

---- PART TWO WILL COVER "REPLACING AND REPAIRING VENEER"

- Tune in next time…….

WOOD RADIO CABINET RESTORATION

PART TWO: REPLACING AND REPAIRING VENEER

BY JOE KOESTER

REPLACING AND REPAIRING VENEER
---- NOT AS TOUGH AS IT SEEMS

- New veneer is 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
- A possible disadvantage to new veneer with backing: it may be thicker than the original, which happens quite often.

REPLACING VENEER ON AN ENTIRE FLAT SURFACE
--- PREPPING FOR GLUING THE NEW VENEER ON

- First remove all the old veneer- use a heat gun along with a paint scraper or drywall knife worked under the veneer. (Save the removed piece for future projects)
- Sand the surface with 100 grit sandpaper and fill any dents or holes with wood filler so there is a level and relatively smooth surface for the new veneer
- Cut new veneer ¼" to ½" larger than the area to be covered, you will trim it later, and make sure the grain direction matches the original.
- Dust off the surface (air compressor is ideal)

GLUING DOWN THE VENEER

- Apply woodworkers glue to the veneer, place it on the cabinet, apply some pressure and smooth it out.
- Then carefully remove the veneer to look for places where the glue is missing on either surface. Add glue to these areas with your finger or a small straight edge.
- Now place the veneer back on the cabinet and position it so that a little extra is sticking over the edge. Use a small roller to roll out the glue and air bubbles. Work from the center to the edges in all directions.
- Remove any excess glue that has oozed out along the edge.

CLAMPING THE VENEER - A MUST WHEN USING WOOD GLUE

- I have used a piece of ¾-inch plywood slightly larger than the cabinet top and used four pipe clamps to secure it. Wax paper should be used too. Use wood blocks to protect the cabinet where the clamps touch it.
- A large console surface requires uniform pressure throughout, and the ¾-inch plywood is sufficiently thick and strong to remain completely flat.
- A thinner wood might bow in the middle and result in a section of unsecured veneer. If that happens, it might be 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, then calmping.

TRIMMING AND CLEAN-UP
- TRIM THE EDGES AND REMOVE EXCESS GLUE

- Use a sharp Exacto or a veneer cutter to trim the veneer.
- 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. 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 keeping the sandpaper perpendicular to the veneer.
- Excess glue must be removed as it will not accept stain. 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.
- Sand the newly veneered surface lightly (with the grain) 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.

ANOTHER GLUING TECHNIQUE

WHILE WE USUALLY APPLY WET GLUE AND THEN CLAMP IT DOWN, THERE IS ONE OTHER WAY TO APPLY GLUE WHEN RE-VENEERING

- Clean both surfaces, that of the radio and the new veneer
- Apply woodworking glue to both surfaces
- An even coat, not too much- Allow both surfaces to completely dry
- Place the veneer on the cabinet and position it carefully
- Align one edge carefully and make sure the veneer is properly positioned
- Take an iron and apply heat to this first edge and slowly work towards the outside edge
- The veneer `will adhere as you iron and there will be no sticky mess!
- There is a heat activated glue you can purchase but I have had success with ordinary woodworker's glue, but do not use glue formulated for exterior use

- “Hot Iron” technique to attach veneer was used on this Zenith1937 Model 10S130 tombstone

- I replaced the walnut veneer on the top and also the walnut burl on the top left of the front

RE-VENEERING A PHILCO -90 CATHEDRAL - MORE DIFFICULT BECAUSE OF THE CURVES

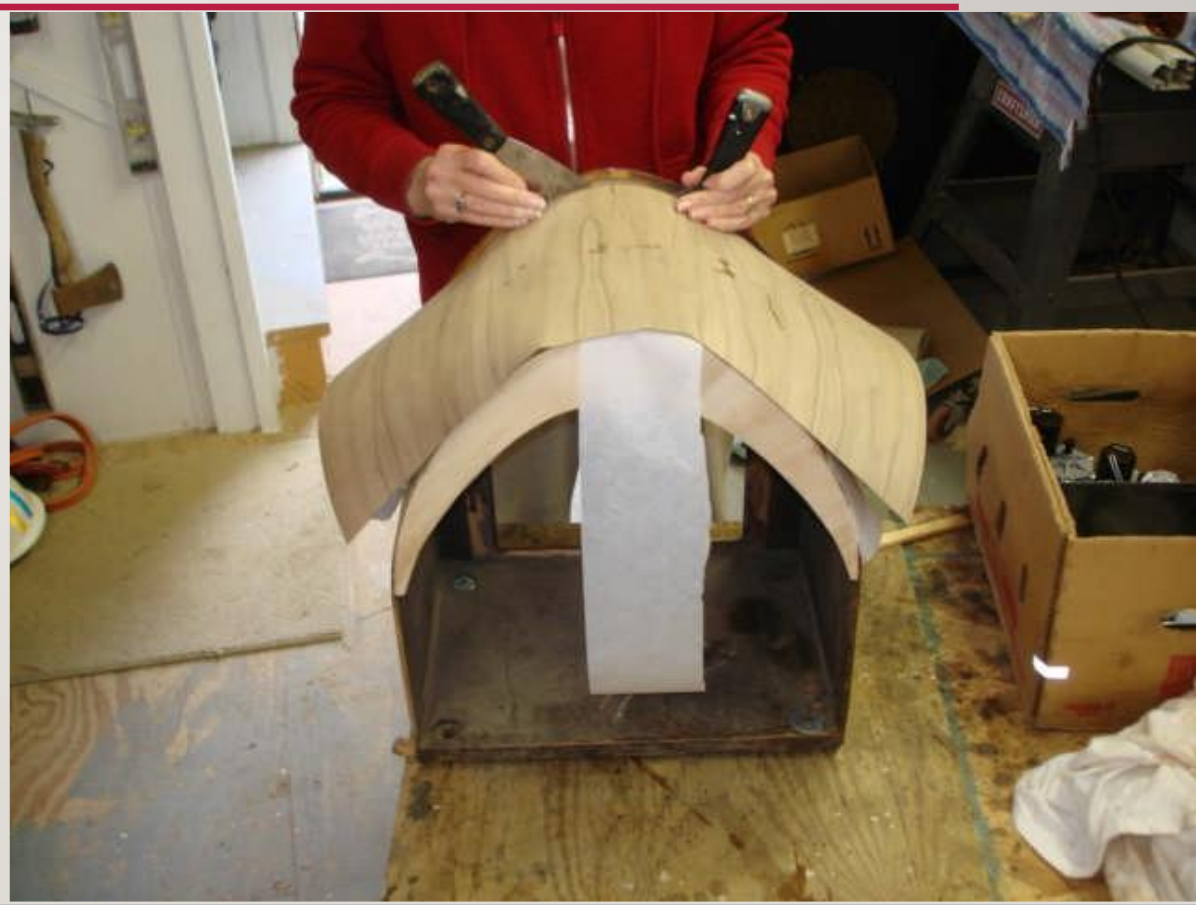
- Used a different type of glue.
- Had to replace the arch and replace the veneer on the curved top.
- The next slides will cover adding the new veneer on top.
- For more detail on the other repairs see the original article reprinted in the *ARCI News* August 2021.

A PHILCO 90: RE-VENEERING THE CURVE - FIRST REMOVE THE OLD VENEER AND GLUE FROM TOP

- Next sand with 100 to 150 grit and remove the dust to be ready for the new veneer
- This one also needed an arch replacement

A PHILCO 90 RE-VENEERING
- WILL USE A DIFFERENT GLUE BECAUSE OF THE CURVES

- It is difficult to clamp on curves so *Weldwood* contact cement was used.
- Both surfaces get coated, and are allowed to dry before the two surfaces are mated. Once the two surfaces touch, they are very difficult to separate!
- Use three pieces of wax paper and another set of hands to center the veneer on the top before removing the center piece of wax paper and applying pressure.



A PHILCO 90 RE-VENEERING THE CURVE - CAREFUL ROLLING OF THE VENEER ON TO THE TOP

- After getting the center section applied, work down one side carefully, removing wax paper as you go.
- Use roller and paint scraper blades to press and smooth out the veneer.

A PHILCO 90 RE-VENEERING THE CURVE - FINAL STEPS

- Trim of the excess with the Excato and sand the edges
- To prepare for staining, the newly veneered surface should be sanded (with the grain) with 150-grit, and then 220-, and finally, 340- or 400-grit paper.
- The following slides show the other repairs that were made other than re-veneering the top

OTHER PHILCO 90 REPAIRS

-RE-ATTACHING THE FRONT

OTHER PHILCO 90 REPAIRS

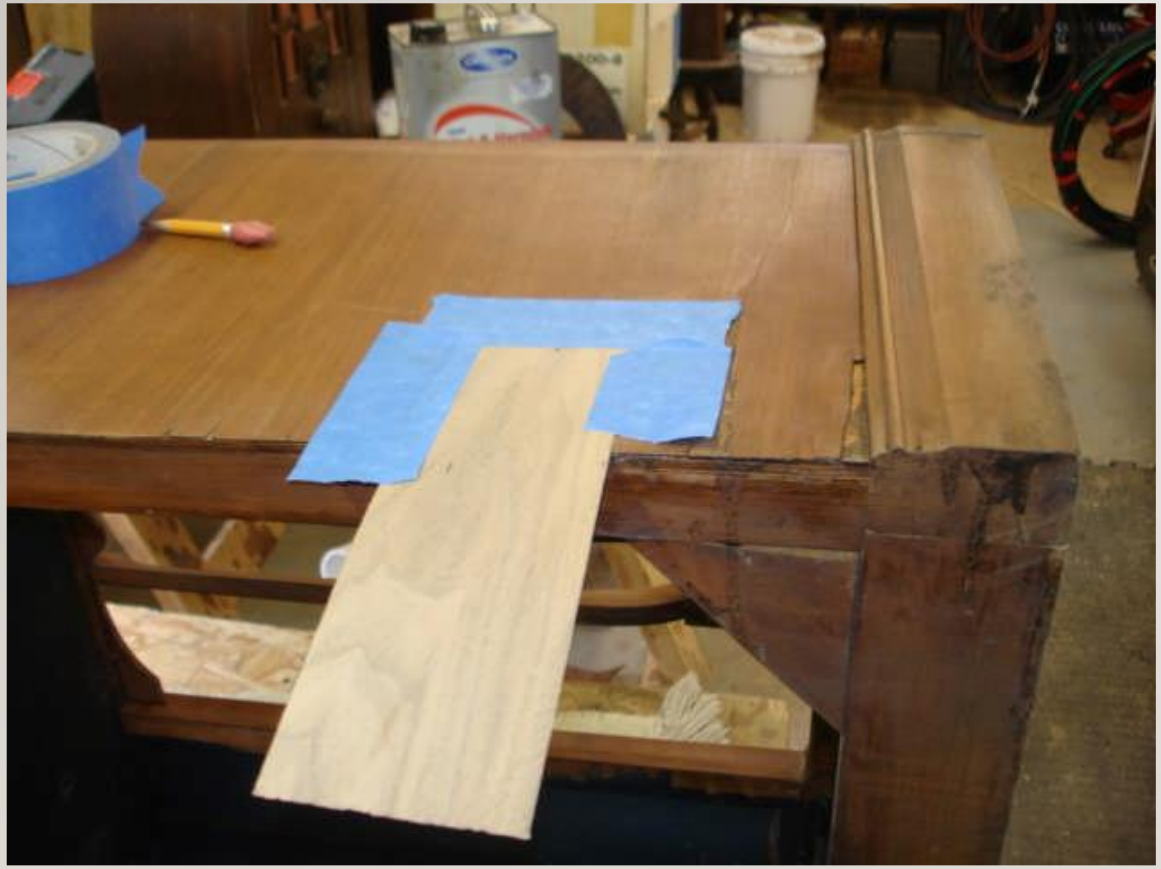
PATCHING WITH VENEER - PATCHING UP A ZENITH 9-S-262

- Needed to replace several medium sized veneer pieces after stripping and cleaning the cabinet
- Used new and old veneer (from the Philco 90) with a similar grain pattern
- Mark the area to be replaced in pencil on the cabinet and then tape the replacement veneer over this (see photos next slide). Use blue tape.
- Outline a somewhat triangular cutting line. Using a sharp Exacto, cut through both pieces of veneer at the same time. (never make square-ish patches, they will stand out!)
- Remove all the old veneer and old glue under the cut and *very* lightly sand the new veneer piece.

CUTTING THE PIECE FOR PATCHING AND GLUING IT

ALWAYS MAKE THE PATCH "SORT OF TRIANGULAR" AND OBSERVE THE PATCH GRAIN LINES ORIENTATION

Preparing to cut the patch and the old veneer under it at the same time



Gluing in the patch prior to glue clean-up

GLUING THE PATCH
- AND ANY OTHER AREAS WHERE THE VENEER IS SEPARATING

- 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 for it to dry.
- When dry then removed any excess glue. The other patches were done this same way
- Also, there were other areas on this cabinet where the veneer was separating and needed to be re-glued.
- I carefully placed some glue under both sides with my thin metal strip and Exacto knife. Pressure was supplied to force out excess glue, was wiped down, and wax paper, wood block, and the Pony Band Clamp tightly secured this repair in the middle of the side.

VENEER IS ALL PATCHED AND FIXED
- TIME TO SAND

- 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 joints where there were gaps
- 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.

END OF PART TWO

---- PART THREE WILL COVER STAINING AND FINISHING

- Tune in next time…….

WOOD RADIO CABINET RESTORATION

PART THREE: STAINING, GRAIN FILLING AND FINAL FINISHING

BY JOE KOESTER

Based upon my article written for *Radio Age*, August 2009 and reprinted in the *ARCI News*, October, 2021

PRESENTATIONS 1 AND 2 DESCRIBED THE STRIPPING, REPAIRING AND SANDING OF THE RADIO CABINET

It is now ready for

1) Staining

2) Grain Filling

3) Final Lacquer Finish, Graining and Toning

STAINING THE WOOD

---- ENHANCES THE WOOD'S NATURAL COLOR

- There are many brands, but Behlen Master Solar-Lux Non-Grain Raising (NGR) Stain is my favorite
- Solvent based--does not raise grain like water-based stains
- Goes on quickly, dries fast and looks great!
- I like the Medium Brown Walnut (B503-6A205) and Nutmeg but there are many other colors to choose from. I have some Jet Black and Blood Red, and any and all of these stains can be mixed to achieve a different color

STAINING THE WOOD

---- OTHER PRODUCTS

- Behlens was bought by Mohawk and a newer solvent based stain is the Mohawk Ultra® Penetrating Stain
- Other stains I have used include Formby's, Carter Tripp, and Lenmar from Baltimore

APPLYING THE STAIN

USE PAINTBRUSH AND RAGS TO APPLY

- Apply with a clean paintbrush, working it into the grain - make sure all surfaces are covered
- As with the stripper, avoid applying it to the top and letting it run down the side, as you may end up with uneven applications and visible runs
- Go over the radio twice and then dip a rag in the stain (use gloves) and wipe over the entire surface
- Wipe in a circular motion to cover the surface evenly, but always end up wiping with the grain
- It dries quickly. Behlen claims you can put a final finish on after an hour, but I always wait at least a day
- Brushes (and sometimes your hands) clean easily with warm water and some hand soap if you need it. If you use other products follow their recommendations, but this method seems to work well with most stains
- Be sure to wipe it down with a rag with stain before you put it aside and you will have an even finish

FILLING THE GRAIN
- *GRAIN FILLER* IS ESSENTIAL FOR A SMOOTH FINAL FINISH

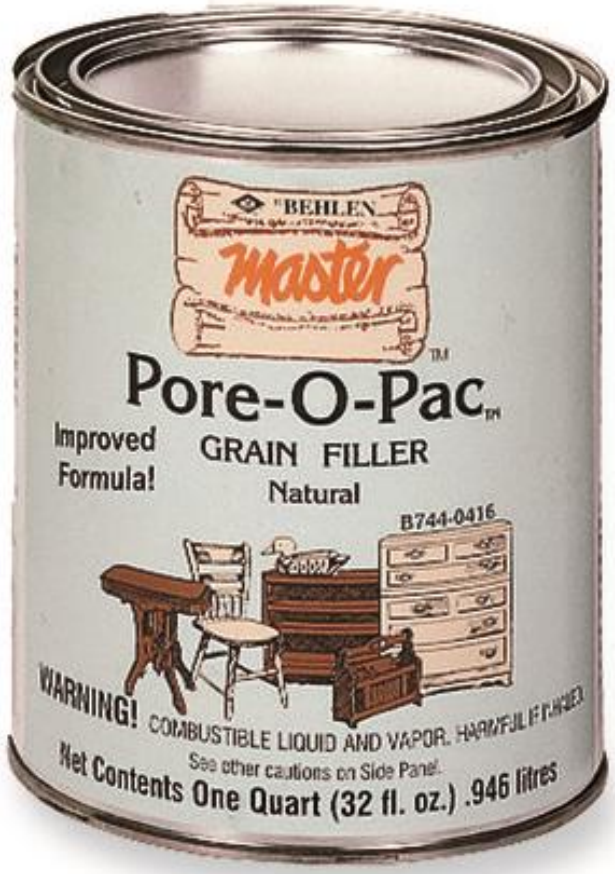
- Many radio cabinets are made of an open-grain wood such as walnut or mahogany. The grain pattern is made of valleys that must be filled to result in a smooth professional finish
- I like to use darker or tinted wood grain filler that fills these valleys with a dark material and gives the wood a very smooth finish—and the contrasting grain filler beautifully highlights the grain
- Grain fillers are NOT the same as basic wood fillers such as Plastic Wood or DAP Wood Dough– these are intended for filling large cracks, gouges or holes. They are invaluable in filling cracks between veneer seams, small nicks out of the back of a cabinet, or other such minor repairs
- The "wood grain filler" used to fill the tiny valleys in the grain is a completely different animal. It is a paste-like substance applied with a brush, normally with the grain to get the maximum amount in the pores

GRAIN FILLERS
- *SOLVENT OR WATER BASED*

- I have had success with Bartley's Dark Walnut and Behlen's Paste Wood Filler (Medium Brown Walnut) but these are no longer available. Other brands are available and they fall into solvent based and water–based – see next slide
- Apply it following the directions on the container, and then after the recommended time, remove it across the grain so as not to pull it from the pores. You must remove the excess filler at the right time, and you have only a small window of opportunity
- If you remove it too soon you will remove too much. If you take too long, it can set like concrete
- It can be softened with mineral spirits, but put it on and remove it properly and you will see instant results
- I use a flat-blade plastic paint scraper to scrape it off, or an old credit card. Wipe the scraper after every pass. Some people prefer to wipe off the filler with burlap. Scrape the excess filler off properly, and you will notice a sheen on the finish. You have just succeeded in making a real difference before you even apply a final finish

- When you purchase water-based wood grain filler make certain it is tinted dark (walnut usually) or that stain can be mixed with it to tint it dark
- For best results use a color darker rather than lighter than the stain on the main veneer so as to contrast and highlight the grain

Water and solvent-based wood grain fillers



GRAIN FILLER OPTIONS - *USING THE GRAIN FILLER AFTER ONE LACQUER COAT*

- You typically apply the wood grain filler right after the stain, and before the first coat of lacquer, and this is what I usually do
- However, another option is to apply the first thin coat of lacquer and then apply the wood filler before subsequent coats. If you apply a tinted or darker wood grain filler over the unsealed cabinet it will tend to make the cabinet darker by bleeding a portion of its stain over the lighter stain already applied. This may or may not be a bad thing
- I tend to like the slightly darker finish on the cabinet. On the other hand, if you achieved the precise coloring you intended with the initial application of stain, then by all means shoot a coat of lacquer or sanding sealer over the cabinet before you apply the wood filler
- It will then fill the grain and will not bleed over on the other portions of the wood

GRAIN FILLING OPTIONS
- *USING SANDING SEALER AS A GRAIN FILLER*

- Another option is to apply sanding sealer—a clear lacquer with an agent designed to help fill the pores. I have used it only a few times and do not claim to have mastered the art of sanding sealer
- Spray a thin coat, then sand with very fine sandpaper (400 or 600 grit) to level the surface, then spray another coat, or proceed to the final lacquer finish. Several coats of sanding sealer can be applied, and will fill the voids in lieu of the wood filler
- The difference is that sanding sealer will retain the original coloring of the stain without the contrasting and darker wood filler. Regardless of which approach you choose, when the grain has been filled, apply the first coat of lacquer
- **Caution on sanding:** Sometimes when sanding over a sanding sealer (a thin coat of lacquer), you can accidentally penetrate through the finish and sand into the stained wood. If that occurs and the mistake is evident, apply a touch of the matching Behlen stain and then continue to apply the finish coats

FINAL FINISHING WITH LACQUER
-GRAINING PEN, TONING LACQUER AND DETAILING

- I always use **Deft Semi-Gloss Lacquer** for the final coats, and I always spray it on with my touch-up spray gun
- I have been using my gun for nearly twenty years and I have a new back-up in reserve. They are available at places like Harbor Freight and are inexpensive
- **Graining Pen:** This is a small, sharp-pointed pen filled with toning lacquer. It is used to simulate the random patterns of grain where none exist or where you need to blend in or hide a veneer patch that stands out. Graining pens are available at woodworking shops
- Simply draw a grain pattern on the wood to help match it. This is normally done after the staining and wood filling, but before the application of the final lacquer finish

My spray gun and supplies

An inexpensive spray gun

FINAL FINISHING
-*TONING LACQUER*

- **Toning Lacquers** are a *second critical step* that will make any radio look like a million dollars!
- Toning is the application of different colored lacquers to highlight areas of the cabinet, to cover plain or grain-less woods, and to shade different areas
- Typically, the base of a console is darker than the rest of the radio, and Medium Dark Walnut, Extra Dark Walnut, or Van Dyke Brown work well. Many cabinets have plain wood trim around the top, shoulders, or strips running up the front. These need to be toned because the plain wood lacks character, and without toning, it would detract from the otherwise nice finish on the cabinet
- Toning lacquer is applied <u>after</u> the first coat of Deft. After a day or so of drying you can mask the areas to be toned using blue masking tape and then taping newspaper to keep over-spray off the rest of the cabinet. Apply in very light passes, only a little at a time. Multiple passes will build up the tone to somewhere close to the original or to what is pleasing to your eye
- If you apply it too heavily, drips will result, and they will have to be removed!

Using Black Gesso to color the speaker edge details

FINAL FINISHING
-DETAILING GRILLE EDGES WITH GESSO

- Note- Prior to initial lacquer and toning, the grille edge needs to be sanded *across the grain,* so use caution so as not to dislodge the thin grille veneer, which is susceptible to damage during sanding. Use medium (150 grit) and fine (220 to 240 grit). Gesso is applied after one lacquer coat
- Colored gesso is used on the grille edges. (see photo slide) Gesso (color tinted plaster of Paris) is used by artists to cover a canvas to provide a smooth and colored finish prior to painting. It comes in black, burnt umber (brown), and white. Gesso is water-based and dilutes well
- Use a small paint brush, ¼-to ½-inch, and have water and paper towels available. Paint the gesso on the raw edge and use a damp towel to remove any excess from the finished front of the grille. It is very easy to remove if there is a coat of lacquer on the wood. I have used brown gesso in place of toning lacquer on trim as well as on the base of a tombstone. I recently used black gesso on the very bottom of an Atwater Kent console, and for various trim pieces on a cabinet
- When the gesso dries it has an unappealing flat finish but the final coating of Deft will cure that

FINAL FINISHING
-SPECIAL EFFECTS- MAKE YOUR OWN TONING LACQUER

- To achieve a "blended finish" use an air gun to spray lacquer tinted with the stains mentioned earlier

- An air gun is simply a much smaller version of a paint spray gun; it puts out much smaller patterns of spray and allows for exact placement of the colored lacquer

- If you have seen feathered finishes where a darker finish bleeds off or blends into the surrounding finish, chances are it was done with an air gun

- The sprayer is attached to a small (one ounce) or larger reservoir and can be use with cans of air or a small compressor

- Pour a little Deft lacquer in a small clear glass container and add the desired stain. You can even apply darker stains over existing stains before you ever put the first coat of final Deft over the cabinet. But I prefer the tinted lacquer best

FINAL FINISHING
-*SPRAYING THE LACQUER*

- **Conditions**: Lacquer must be sprayed when the humidity is below 70 percent!
- The first time I sprayed lacquer in Maryland it must have been in the 90 percent range and my Atwater Kent cathedral turned white!
- I spray outdoors, but not when the dandelions are winging their way about or there are swarms of insects, which are always drawn to the smell
- Have your cabinet finishing jobs saved up and ready to go for that nice day with low humidity and temperature in the 60s or above

FINAL FINISHING
-HOW TO SPRAY LACQUER

- This is a very easy way get a killer finish on a radio. I use a little "touch up" gun that holds maybe a half pint of lacquer

- With the Deft semi gloss lacquer, set the air pressure to around 65 pounds—adjust for your particular gun

- If the air pressure is too high, it will result in a bumpy orange peel finish, so cut the air down. If the spray is mostly air, increase the flow of the product until you get a uniform pattern emerging from the gun

- Most air guns have an adjustment for a horizontal or a vertical fan pattern. I use both, but mostly vertical, which covers a larger area per pass on, say, a console

- Like the toning lacquer, spray the finish lacquer on lightly and in multiple passes. Resist the impulse to spray on a heavy coat or you will find out what "sags" or runs are. Six or eight coats will usually be plenty

- Spraying is really very simple, slow and easy. By following these directions, your radio is going to look super, but *take your time*!

FINAL STEPS
-STEEL WOOL AND WAXING

- After the cabinet has dried for a day or two, go over it lightly with some 0000 steel wool. This will smooth the lacquer finish and will turn it somewhat dull in the process
- Be gentle; you want a smooth finish and don't want to bear down hard, especially on the edges where you can end up going through all the lacquer
- You will see white lacquer residue in the steel wool. Shake it out occasionally. As always, wipe with the grain. When I finish with the steel wool, I blow the cabinet clean (an air compressor is a wonderful addition to any shop!) and wipe it off with a clean T-shirt or soft towel
- Then I apply a coat of Antiquwax (described in the earlier presentation) and buff the cabinet. You will be surprised at the nice finish you get using these methods

FINAL FINISHING OPTIONS
-THE HIGH GLOSS "PIANO FINISH"

- Before you wax that cabinet you might like to go a step further and get a high gloss "piano finish". A colleague and I addressed this several years ago in the MAARC Newsletter (October 1996, p. 10) and called this method the **F**ine **A**brasive **R**estoration **T**echnique
- If you choose this method, finish the cabinet with Deft high-gloss lacquer rather than semi-gloss. Essentially what you do is continue to sand the finish with increasingly finer abrasives, starting with 400 grit and continuing to 600, 1000 and 1500 grit, using wet and dry paper. Use water or paraffin oil as a lubricant
- I have seen people get excellent results with tung oil, but I have never tried it
- After the finest grit wet and dry paper, progress to a fine pumice, and finally to rottenstone. The cabinet will shine like a new penny!

FINAL FINISHING
-CLEAN UP AND FINAL COMMENTS

- When you are done be sure and clean the spray gun. Fill the container with lacquer thinner and spray it into the air (not near the radio or neighborhood kids and dogs!) and wipe the exterior off with a wet paper towel or rag to remove any dried lacquer
- There are far too many methods and products to attempt to address all within the scope of this presentation. As stated before, this is simply one man's opinions and methodology
- Some of my early attempts looked like I applied polyurethane varnish with a broom. I like to think I have progressed beyond that point. These methods work for me, and I know they will work for you!
- Good luck in your refinishing adventures!

APPENDIX
LIST OF MATERIALS AND SUPPLIES

- Behlen Master Solar-Lux, Non-Grain Raising Stain:
- Medium BrownWalnut (B503-6A205)
- AmericanWalnut (B503-6A235)
- Nutmeg Brown (B503-6A265)
- Medium Brown Mahogany (B503-3A135)
- Hickory (B503-6A286)
- Golden Fruitwood (B503-4A565)
- Jet Black (B503-01A45)
- Blood Red (B503-3A285)

- Lenmar Permanent Brushing Stain:
- Ebony Black (U-622)
- DarkWalnut (U-617)
- **Lacquer Finish**:
- Deft Semi-Gloss ClearWood Finish
- Deft High-Gloss Clear Wood Finish
- Deft Lacquer Sanding Sealer

APPENDIX
LIST OF MATERIALS AND SUPPLIES

- **Toning Lacquers**:
- Mohawk Tone Finish Toner:
- Van Dyke Brown (M101-1478)
- Medium Dark Walnut (M101-0234)
- Extra Dark Walnut (M101-0209)
- [Excellent for cabinet bases]
- Dark Red Mahogany (M101-0227)
- Perfect Brown (M101-0249)
- Cherry Brown (M101-8359)
- Behlen Master **Graining Pen**, Brown, Dark (B265-004)
- **Grain Fillers**:
- Behlen Pore-O-Pac Paste Wood Filler
- (Grain Filler), Medium Brown Walnut
- (B744-1F156)
- Bartley Paste Wood Filler, Dark
- **Detailing Products**:
- Liquitex Acrylic Colored Gesso (Black)
- [Hobby Lobby]
- Liquitex Acrylic Colored Gesso, Burnt
- Umber (Brown) [Hobby Lobby]