



WARCI News

Wisconsin Antique Radio Club, Inc.

Happy New Year!

January, 2010

Empire Model Five – Beaver Dam WI

A nice looking (if I do say so myself – it's in my collection!) 1926 three dialer made by Empire Electric Mfg. Co. of Beaver Dam (factory) and Milwaukee. See page 15 for a look at Empire.



NEXT WARCI MEET!

	Sunday, January 24; 8:00 – 11:00 AM See Winter Meet Ground Rules, page 5
	The Terminal, 5917 S. Howell Ave., Milwaukee (near the Airport)
	Features: Annual Business Meeting, 9:30-10:00 AM, Election of Officers and Board for 2010

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WARCI

The Wisconsin Antique Radio Club, Inc. exists to preserve the knowledge of radio, television, and other related disciplines. We have a special interest in the history of radio in Wisconsin, Wisconsin radio companies, radio stations, etc. Our members' interests include radio, television, audio, and antique phonographs.

OFFICERS AND BOARD

President - Bill Engaas
craftyradio@earthlink.net
262-786-8183

Vice President - Greg Hunolt
ghunolt@excel.net
920-893-0422

Treasurer - Terry Hanney

Secretary - Ralph Larsen

Board - Jim Choroszy
Steve Lange
Dennis Schrank

WARCI News Editor - Greg Hunolt

WARCI Website - Nick Tillich
webmaster@warci.org

WARCI Information

WARCI is incorporated in the State of Wisconsin.

Annual membership dues are \$15, for each calendar year, January - December.

Seller's fee at Swap Meets is \$7.00 for members, \$10 for non-members.

Swap Meets are held at The Terminal, 5917 S. Howell Avenue, Milwaukee WI (near airport).

The first 2010 Swap meet date is Sunday, January 24. Swap meet times are 8:00AM - 11:00AM.

WARCI News

This newsletter is the official publication of the Wisconsin Antique Radio Club, Inc. It is published four times per year, in January, May, July and October. The WARCI news is free to all club members.

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Articles or material for the newsletter are most welcome and should be sent to Greg Hunolt, ghunolt@excel.net or N5412 State Hwy 57, Plymouth WI 53073. Include your name, address, phone, and email. PC format (e.g. MS Word) by email is preferred. JPEG for images is preferred. Please contact Greg Hunolt for assistance.

Classified ads up to ¼ page are free to WARCI members

The cut-off date for all newsletter material is about the first of the month preceding publication of the next newsletter (e.g. December 1 for the January issue).

WARCI Website New URL **www.warci.org**

The WARCI website features information about WARCI activities, Wisconsin radio, articles, etc. Contributions are most welcome! Contact webmaster Nick Tillich, at webmaster@warci.org.

A Profile of Richard Hagerty, by Dennis Schrank

As radio collectors, I'm sure we have all shared the experience of turning on one of our prized old sets only to have our ears assaulted by the maniacal raving known as "talk radio". Gone are the days of big band remotes, Jack Benny, The Shadow, Gangbusters, and all the other great shows that once graced our airwaves. Although this type of programming is very rare on AM radio today, there are still sources where it can be found. One of the best is WARCI member Rick Hagerty's fine program, Radio Roots, heard on community station WRLR FM, 98.3, in Round Lake IL every Tuesday morning from 9:00 AM until noon. You are not likely to pick this station up north of the border, but fortunately it is streamed to us via the internet at <http://www.wrlr.fm/>.

Rick's earliest memories of old time radio involve listening to these classics on his family's big old Admiral console when he was a child. Rick served a 2 year hitch in the Navy as a fire control technician. This was followed by 20 years as an electrician and another 20 in the printing trade. Shortly after retirement 3 years ago Rick moved to Kenosha and began pursuing his hobbies seriously. This includes a vast collection of old time radio shows in various formats. Rick's personal favorites are Fibber McGee and Molly, Jack Benny, Life of Riley, Great Gildersleeve, Fred Allen, and Phil Harris. Of course many other shows are well represented on the air. In addition to his OTR radio program, Rick is involved with RG Productions Audio Theater, recreating the old classic radio shows. Rick is the sound engineer and occasional cast member. Their most recent production was the Retro Radio Holiday Revue presented on Saturday, December 12 at the Kenosha Public Museum. More information on RG Productions activities



Rick behind the WRLR mike.

can be found on their website <http://rgaudioproductions.com/index.html>.

As you can see, retirement has kept Rick a very busy guy. He can often be seen at our swap meets. Give a listen to his program next time you have a chance, or attend a RGP performance. (30)



Ewing Nunn, Radio Manufacturer by Ralph Larsen

[Editor's Note: An earlier version of this article originally appeared in the January 2001 WARCI Newsletter.]

Nunn radios were made in Milwaukee for more years than any other local manufacturer. The Nunn-Landon Company successfully made the transition from battery sets to AC power. Nunn-Landon sets included floor models, large number tube sets, superhets, tombstones, and even cathedrals.

The Nunn-Landon Company was formed in 1925 and ended in 1930. It seems likely that Ewing Nunn was making radios before the company was formed, as some early radios were simply marked "ED Nunn". See Figure 1, the ED Nunn Special Five for an example.

Figure 1 – ED Nunn Special 5



Others are labeled ED Nunn but also have a Nunn-Landon tag, and Figure 2 is an example of such a set, the model N4A. It also bears a label saying it was distributed by the Hansen Storage Company of Milwaukee, and probably dates from 1925.

Nunn-Landon later adopted the trade name "Cascade". Figure 3 shows an example of a Cascade set, probably a 1926 model, that is

Figure 2 – Nunn Model N4A



marked ED Nunn on the front panel but also has a Nunn-Landon sticker.

Figure 3 – Nunn-Landon 1926 Cascade



In 1927 Nunn-Landon produced the elaborate battery powered console Cascade model V-27, shown in Figure 4, complete with matching piano stool. Figure 5 shows the similar table model

Ewing Nunn - continued on Page 6

WARCI Business Meeting January 24

WARCI will hold its annual business meeting during the January 24 swap meet. The meet opens at 8:00 AM, the business meeting will start at 9:00.

The business meeting will include nomination and election of officers and board members for 2010. We will also have a treasurer's report and a discussion of plans for 2010.

In 2009 we added two of the most strongly recommended activities from the WARCI membership survey. We'll discuss what we might do in 2010 to build on our 2009 success.

If you would like to become more active in WARCI please step up! Organizations like WARCI depend upon volunteers for their success. For example, right now the club needs help with public relations.

WARCI vs the Weather! Winter Meet Ground Rules

Winter meets will be held on a weather-permitting basis. This applies to swap meets planned for January and March (and who knows, October and May!).

On the afternoon before the meet, if there is a forecast of snow or ice for the morning of the meet, the meet will be cancelled.

Notice of the cancellation will be posted to the WARCI website. In addition, all members will be notified by email or telephone the afternoon or evening before the meet.

2010 Membership Dues – Now!

WARCI memberships run January through December. Annual dues of \$15 will be collected at the January swap meet. We will ask renewing members to complete a new (but short) form collecting information for our membership roster.

Bob Paquette's Microphone Museum



WARCI member Bob Paquette's Microphone Museum features his collection of well over 1,000 different makes and models of microphones as well as related pieces of equipment. The emphasis is on historically important microphones made between 1876 and 1950, and early radios, telephones, and many other communications devices, including an assortment of military gear.

You can see more photos and find out more about Bob's book "History and Evolution of the Microphone" at his website, <http://www.sssmilwaukee.com/Microphone%20Museum.html>

Bob always enjoys visitors and will be happy to give a guided tour to individuals or groups. You can call Bob at Select Sound (414) 645-1672 to arrange for your visit. Just ask for Bob Senior. The museum is located on the second floor of Select Sound, 107 E. National Avenue in Milwaukee. Enjoy your visit and allow yourself plenty of time. You won't want to leave.

Cascade V-28. (See page 6.)

Figure 4 - Nunn-Landon Model V-27 Cascade Console, 1927



Figure 5 - Nunn-Landon Cascade V-28



In the WRTA Broadcaster in October 1928 Nunn-Landon advertised (see Figure 6) a group of sets under the Cascade name, 1929 models including the Niagara (5 tube) and Victoria (6 tube) for DC or AC operation, and the Yellowstone (7 tube) AC model and the Yosemite console AC console shown in the ad. The ad lists seven dealers for Nunn-Landon sets, including Flanner-Hafsoos Co., Federal Tire and Supply Co., Held and Held, J. Mandelker & Co., Bates Radio Co., Milwaukee Radio Supply Co., and Kappelman Radio Co.

Figure 6 - Nunn-Landon Ad, October 1928

Wisconsin Radio Trade Association

CASCADE

Again THE OUTSTANDING IN RADIO RECEPTION in the FIELD OF BETTER SETS

CONSISTENTLY, for five years, the Nunn-Landon Company has built Radio Instruments that excel, and the Models for 1929 are still the standard of comparison in performance and workmanship.



Yosemite Model



Yosemite Model

Niagara (Five Tube) and Victoria (Six Tube) Model Cascades are built for both AC and DC operation. Yellowstone (Seven Tube, Push-Pull) and Yosemite (Power Amplifier) Models with Dynamic Speakers are for AC operation. The striking beauty of Cascade cabinets are exclusive in design and are constructed of carefully selected Figured Walnut and Bird's Eye Maple. Visit Cascade Exhibits at the Dealers listed below.

NUNN-LANDON COMPANY, Inc.
MILWAUKEE, WISCONSIN

Milwaukee Dealers

Flanner-Hafsoos Company—Booth No. 146 Kilbourn Hall
Federal Tire & Supply Co. — Booth No. 77 Main Arena
Held & Held—Booth No. 147-148 Kilbourn Hall
J. Mandelker & Co.—Booth No. 19-20 Main Arena
Bates Radio Co.—Booth No. 1 Main Arena
Milwaukee Radio Supply Co.—1225 Third St.
Kappelman Radio Co.—3820 Vliet St.

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Editor's Note:

The WARCI News is your newsletter!

Your comments and suggestions for the newsletter are most welcome.

Your contributions of articles or other material are urgently needed. Your help is needed to make the WARCI News a success and to ensure that it covers the full scope of the interests of WARCI members.

You may submit complete articles, but information from which an article can be developed is also welcome. Don't agonize over format, etc., as the editor will have to adapt your submission to the newsletter. Simple text is best. PC format (e.g. MS Word, jpegs by email) is preferred but hardcopy text and photos are accepted.

In this issue we feature an article by Dennis Schrank profiling WARCI member and broadcaster Richard Hagerty. The series of articles on Wisconsin radio companies and Wisconsin radio history continues with an article by Ralph Larsen on Ewing Nunn, a Milwaukee radio manufacturing pioneer, and on Empire Electric Mfg. Co. of Beaver Dam and a follow-up on Klitzen.

Thanks go to Dennis and Ralph for their articles!

We will also cover tube audio and television and other member interests - but we need your contributions!

We will add classified ads as soon as you send them in. Another "Odd Bits" appears in this issue, but your 'odd bits' are needed!

Thank you,
- Greg Hunolt, Editor, WARCI News

In the WRTA Broadcaster for October 1930 Nunn-Landon advertised (see Figure 7, page 7) the 1931 model Cascade Sierra AC console (12 tubes). In this ad Nunn-Landon claimed to have made radios as early as 1922. That date appears to be an exaggeration. Nunn apparently continued to use the "Cascade" name for sets made in the early 1930's, but it is most likely they were made in Chicago. By 1935 Ewing Nunn was using a Chicago address for his business.

Figure 7 - Nunn-Landon Ad, October 1930

The Super-1931 Selective **Nunn-Landon Cascade Radio**

The Cascade Does Better What Others Do Well

ENTHUSE AGAIN with Selectivity-- Distance Performance

The Sierra Cascade cabinet is an exquisite creation.
Natural tone quality over the full musical range.
Great power perfectly controlled by local and distance switch.
Satisfactory operation over moderate distances by using Cascade built in piec up. (Suitable for apartment installation.)

Flanner-Hafsoos
417 Broadway
Will Gladly Demonstrate

Manufactured By
Nunn-Landon Co., Inc.
1115-1117 Fourth Street -> Milwaukee, Wisconsin
Exclusively Manufacturing Fine Radio Instruments Since 1922

October, 1930 Please Mention The Broadcaster when Writing Advertisers Page Forty-nine

The Milwaukee factory address for the Nunn-Landon Company was listed as 1115 North 4th Street. That would place it just north of the Bradley Center building. Was it a showroom too? Possibly, but hard to say. As shown above an early Nunn-Landon set, the N-4A, indicated that it was distributed by the Hansen Storage Company, who did have a showroom for their own

radios. As we've seen, later advertisements indicate that they were being distributed by Flanner-Hafsoos and others.

Ewing Nunn was the son of Henry L. Nunn, the President of Nunn-Bush Shoes. Early on his father was an officer in the Nunn-Landon Company. Henry Nunn was a well known Milwaukee figure. In 1936, the Milwaukee Journal made him its "Man of the Year". Henry Nunn wrote two books; his first was a popular book on labor relations. Henry advocated a profit sharing system for employment, a system later adopted by the Milwaukee Journal. The Journal adopted the system, by its own account, to prevent a hostile takeover.

Ewing Nunn apparently maintained his business in Chicago until 1937. He returned to the Milwaukee area about that time. He started Audiophile Records in the 1940's and primarily recorded Dixieland music. He continued his recording business until the 1960's and would do primarily vanity pressings and

folk music. At least one pressing of folk music, "Blues, Rags, and Hollers", is still sought by collectors and has been reissued on a CD. Nunn's studio was located in Saukville, but many of his recordings were done on location. According to musicians who worked for him, he was a hard and demanding taskmaster. I have one of his recordings. Not only is the recording well done, but the commentary on the music is very professional.

Nunn had other businesses too. He owned Northern Signal Company which made light signals for railroads and flashing lights for construction sites. Northern Signal Company was located in Saukville. He also owned a company down south called Southern Signal Company.

Readers are invited to contribute any additional information they may have on Ewing Nunn or the Nunn-Landon company, and photos of their Nunn-Landon sets to add to the Nunn-Landon section of the Wisconsin radio gallery on the WARCI website. (30)

More On Klitzen by Greg Hunolt

This is a brief follow-up on my article "On Klitzen!" that appeared in the October 2009 issue of WARCI News. More information on some early Klitzen receivers has come to light!

Glenn Trischan showed me an early Klitzen receiver from his collection. It is a regenerative tuner-detector strapped to a two-stage AF amplifier, anticipating the model 525. The Klitzen tag with "manufactured in Racine, Wisconsin" is on the chassis at the far right in the chassis photo, figure 2, next to the porcelain tube socket. Figure 1 shows the front panel.

Figure 1 - Early Klitzen, front panel

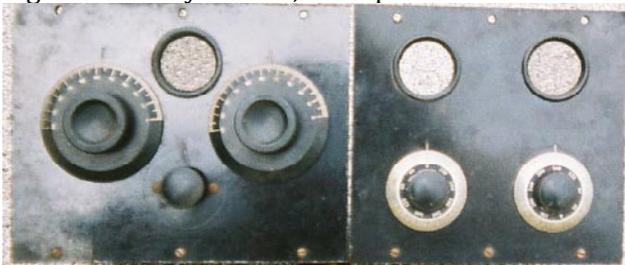


Figure 2 - Early Klitzen, chassis



Ordean Christianson of Mora, Minnesota sent me photos of his Klitzen model 500 Regenerative Amplifying Receiver. It is a two tube model, with a regenerative detector and AF amplifier stage. It is very similar to the Klitzen 525 which included two AF stages. Ordean's set took a first prize in the Northland Antique Radio Club (NARC) Radio Daze 2006 '1920's Radios' contest and was pictured in the Fall 2006 NARC Newsletter.

More on Klitzen - continued on Page 9

More on Klitzen - continued from Page 8

Figures 3 and 4 below show Ordean's Klitzen 500.

Figure 3 – Klitzen 500 Regenerative Amplifying Receiver, Front Panel



Figure 4 – Klitzen 500, A Look Inside



Merrill Bancroft contributed photos of his Klitzen manufactured receiver and amplifier that were distributed by Paramount Radio Corporation of St. Louis as the "Junior" receiver. See figures 5 and 6 below. (30)

Figure 5 – Klitzen / Paramount Receiver and Tag



Figure 6 – Klitzen / Paramount Amplifier



Discovery World of Milwaukee – “Tesla Lives!” Show

Filling the stage with 20 million volts of roaring, crackling, sizzling electricity, a continuing live theater show **TESLA LIVES!** delivers an energetic and sometimes humorous glimpse into how our modern world was designed by the godfather of the 21st century, Nikola Tesla. Through Discovery World's latest theater production, audiences will meet the genius who invented the modern world and find the genius within themselves. See www.discoveryworld.org/teslalives.php for information.

The Magic Eye Tube, by Brian Belanger

(with advice and hints from Ludwell Sibley)

Editor's Note: [Editor's Note: This article is reprinted from the October 2008 issue of Radio Age, the Mid-Atlantic Radio Club (MAARC) newsletter, with the kind permission of editor Brian Belanger. Radio Age is an excellent monthly publication, by itself well worth the \$20 annual MAARC membership fee (contact Paul Farmer, oldradiotime@hotmail.com) to join and receive Radio Age.]

If ordinary antique radios are “cool” (no doubt Radio Age readers would agree that they are), I would argue that antique radios with green glowing eye tubes are even “cooler.” In radio auctions and flea markets, a radio with a magic eye tube will usually bring a higher price than a comparable radio without the magic eye. Over the years, the *MAARC Newsletter* and *Radio Age* have included many articles and tidbits about magic eye tubes by writers such as Ed Lyon and Ted Hannah. *Tube Collector*, the journal of the Tube Collectors Association, is another excellent source of information. It seemed appropriate to gather the most important information from those sources together in one place, and that is what this article seeks to accomplish. The Bibliography lists sources of information.

Tuning Indicators

Actually, the correct name for magic eye tubes is “electron-ray tuning indicator tubes,” but just as people talk about “Kleenex” when referring to facial tissues, and “Xeroxing” when referring to photocopying, most of us talk about “Magic Eye” tubes (RCA’s name) rather than electron-ray tuning indicator tubes. RCA seemed obsessed with magic in the 1930s. In addition to magic eyes, their sets had “Magic Brains” and “Magic Voices.”

One nice feature of magic eye-equipped radios is that you can tune in the station accurately even with the volume turned down.

Alan B. Du Mont is credited as the inventor of the

magic eye tube. He came up with the idea around 1930 and sold his patent to RCA in 1932. RCA introduced the first magic eye, the 6E5, in 1935. Prior to that, there were a number of other devices used to help the radio user ensure that the radio was tuned to the center of the station’s carrier frequency. For example, Philco had its “Shadowgraph.” Stomberg-Carlson used a tuning meter on some models. Fada, Atwater Kent, and some others used the “Tune-A-Lite” or “Flash-O-Graph” tuning indicator. But once the green magic eye tube became popular, other types of tuning indicators fell by the wayside. Since the magic eye tube and other similar tuning indicators acquire their signal from the AVC (automatic volume control) line, the principal application of Du Mont’s invention had to follow the invention of diode AVC by Harold Wheeler of the Hazeltine Corporation. Wheeler came up with the AVC idea about 1926, applied for a patent (that was granted in 1932), and by 1930, radios were beginning to appear with the AVC feature.

The earliest simple tuning indicators were dc milliammeters (typically with a range of about 10 or 15 ma.) connected in series with the plates of the AVC-controlled IF or RF tubes. (The plate current of an AVC-controlled tube *decreases* when a signal is tuned in because the AVC voltage used as negative bias for these tubes increases, and more negative bias reduces plate current.) Because the meter reading decreases as the station is tuned in, such tuning indicators were typically installed upside down so the needle would deflect to the right as the station is tuned in.

The Magic Eye Tube - continued on Page 11

Another approach to a tuning indicator uses a meter in a bridge circuit on the B+ line such that the bridge becomes unbalanced when the plate current changes. That way the meter will deflect to the right as the signal increases without having to invert it.

Instead of a meter with a needle, the Shadowgraph used a small swinging vane in front of a light source. As the AVC voltage increased, current through a small coil changed proportionally, and the resulting change in the magnetic field deflected the vane. As the vane rotated, it changed the size of the shadow falling on a screen.

Facts About Eye Tubes

The **6AD6G**, introduced in 1938, has *two* fan-shaped displays in one tube. It is often used in test instruments.

The **6AF6G** also has fan-shaped displays in one bulb, but is shorter than the 6AD6G. Both the rare 6AD6G and the more common 6AF6G typically require a separate driver tube.

The **6G5** came after the 6E5 (in 1936). The **6U5** appeared a couple of years later and was similar to the 6G5. Replacement tubes often carried the designation 6U5/6G5. The 6U5/6G5 was used in radios with a higher AVC voltage than those employing the 6E5.

The **6H5** was registered by Raytheon in 1936 and was just like the 6G5 except for an annular display rather than the fan-shaped display.

The **6N5**, introduced in 1937, had a lower heater current (150 ma.), and was designed for farm sets. Its cutoff bias was intermediate between that of the 6E5 and the 6U5/6G5. Later versions were labeled 6AB5/6N5.

About the same time, the **6T5** was introduced and marketed by Arcturus, Raytheon, and Sylvania. Like the 6H5, it featured an annular display. This tube was used in a few Zeniths (including some of the popular

Zenith "Shutter dial" sets, as well as in at least one Crosley). But, it never became popular with manufacturers, was discontinued in 1939, and today NOS 6T5s are scarce and expensive.

The **2E5** and **2G5** magic eye tubes were the 2.5-volt analogs of the 6E5 and 6G5 respectively, and were used to provide a magic eye retrofit for older radios with 2.5-volt filament tubes. Today they are very hard to find NOS, especially the 2G5.

The **6M-E5** (or 6ME5 or 6EM5) was offered by Toshiba, Matsushita, and a company named PRC (and perhaps others). They are similar in performance to the 6E5, but with a small 7-pin base. The 6EM5 was used in some early 1960s Heathkits, such as the AJ-11 tuner. Check the Sams Photofact #601, folder 6 for tech data.

The rare **6X6G** was introduced by Rogers in 1937 was used in a number of Canadian radios. There is conflicting information in the literature, in particular, incorrect information about the actual basing diagram. Be careful what tube manual you use! The *Radio Amateur's Handbook* has it wrong, as does the 1946 Canadian Marconi *RVC Radiotrons* data book. The Radio College of Canada binders seem to have it right, according to Ludwell Sibley.

The 6X6 was unusual in that it provided a deflection of more than 90 degrees. Actually, it is possible to get ordinary magic eye tubes to deflect more than 90 degrees. (See the Bibliography for articles by Ludwell Sibley and Ed Lyon that discuss the 6X6 and increased deflection. The RCA tube manual RC-14 also discusses how to obtain greater than 90-degree deflection.)

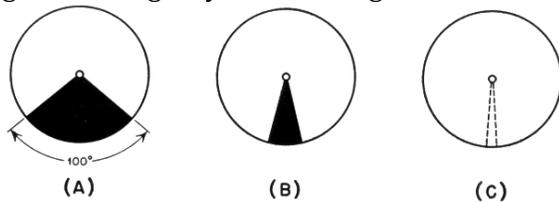
GE radios with magic eye tubes often had the GE logo in the center of the eye tube. GE's orders to RCA for these tubes usually called for having the logo on the light shield. GE introduced the **6AL7GT** in 1947, and it was used in television sets and FM radios.

There were a few European tuning indicator tubes at the end of the vacuum tube era, such as the EM84, but I will leave it to some other author to document those.

How an Eye Tube Works

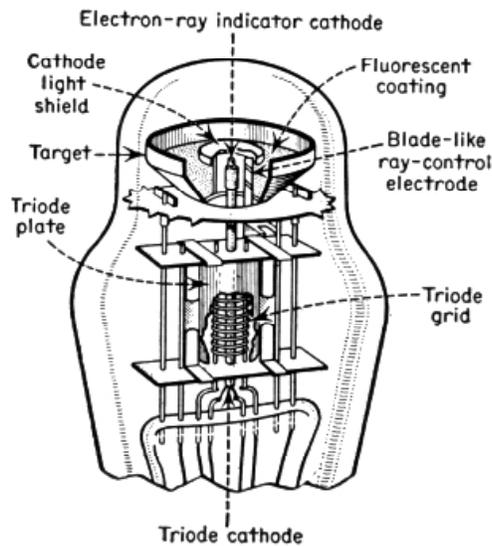
Most radio collectors are quite familiar with the look of the typical magic eye tube. With no signal, the tube displays a dim green wedge of about 90 degrees. As the signal strength increases, the size of the wedge decreases, and with a very strong signal, the wedge essentially disappears and the whole display is bright green. See figure 1 below.

Figure 1 - Magic Eye Tube Wedges



Typical magic eye tubes look like (A) when tuning between stations with no carrier present. With a weak station, the wedge shrinks as in (B), and with a strong station, the eye is nearly or fully closed as in (C).

Figure 2 - Magic Eye Tube Internal Construction

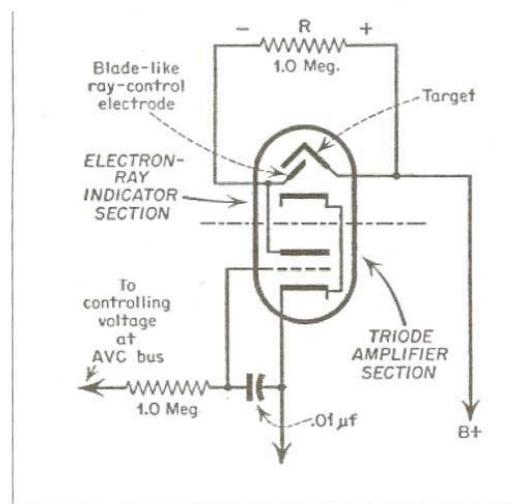


Inside the magic eye tube is a high- μ triode that

serves as a DC amplifier. The AVC voltage is amplified by this triode. The tube's plate current therefore varies depending on the strength of the AVC voltage. Above the triode is a cone-shaped electrode coated with a fluorescent material (zinc orthosilicate is what Dumont used) that glows green when struck by electrons. Philip Rheinschild (see Bibliography) speculates that Dumont used zinc orthosilicate because Dumont lived in New Jersey, and the best source of zinc orthosilicate is found there. There are other fluorescent materials that might have been used, but they would have produced colors other than green. So, we have New Jersey to thank for that pretty green color.

A small cathode is at the center of the cone, and it produces the electrons that travel to the circular anode target, which is usually operated at a positive potential of about 150 to 250 volts. Between the cathode and the target is a blade-shaped electrode which RCA called a "ray control." The electrode is connected to the triode plate. When the potential of this electrode is less than that of the target, it repels electrons, and that casts a shadow on the target. As the voltage increases, the shadow decreases in size, and if the ray control reaches the same potential as the target, then there is no shadow.

Figure 3 shows a typical Magic Eye tube circuit.



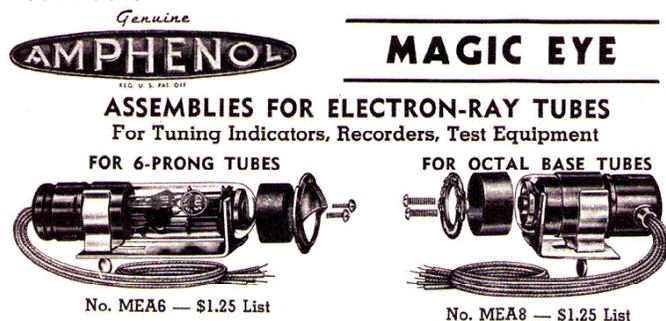
The 1-megohm resistor, R, shown in the schematic

in figure 3 above the tube outline, is usually found in the eye tube socket. (Not the eye tube base, but the socket into which the tube plugs.) It sometimes opens, and if that happens, the tube will not deflect, so for a non-functioning eye tube, check to make sure that resistor is good.

The Use of Eye Tubes

Radio service shops circa 1940 often retrofitted 1930s radios with magic eye tubes as customers requested that service. At the time a service shop could purchase a kit from vendors such as Amphenol containing an eye tube, a socket and wiring harness, an escutcheon, mounting brackets and hardware, and instructions (see figure 4 below for an example of an ad). A hole would have to be drilled in the front panel. Until I realized that, I was puzzled when I first began collecting radios and found a radio with an eye tube that, according to the Rider schematic, was not supposed to have one!

Figure 4 - Magic Eye Sockets - Add a Magic Eye to Your Radio!



Initially, eye tubes were found primarily in high-end consoles, but before long, they began to appear even in smaller medium-priced table models. Arvin, Belmont, Sparton, Airline, Silvertone, and Stomberg-Carlson are examples of brands that used magic eyes in table models fairly regularly. Philco, a principal rival of RCA, shunned magic eye tubes.

Test instruments such as capacitor checkers, bridges, and signal tracers often use eye tubes. At antique radio auctions, you often can purchase one of these instruments for less than the cost of a separate eye tube.

1950s- and '60s-vintage hi-fi AM and FM tuners frequently used eye tubes.



In 1936 Empire Radio Corp. of Chicago offered a magic eye tube housed in the fuselage of a polished aluminum airplane that sat on top of the radio.

Service Hints

Dim CRTs can sometimes be brightened with a picture tube rejuvenator. The question is, is there an analogous way to rejuvenate dim magic eye tubes? Several articles have appeared in the literature to suggest that this might be possible, and suggesting things to try, for example, the ones by Paul Bourbin and Jim Farago in *Antique Radio Classified*. The assumption is that the dim display is caused by weak emission. The results reported in ARC varied. Some tubes showed no improvement, some brightened only briefly, but others lasted for a time. Tube expert Ludwell Sibley made a careful study of this involving 33 eye tubes, and reported his results in the August 2008 *Tube Collector* (see Bibliography). His conclusion was that rejuvenation does *not* work. Sibley's theory is that contamination of the target is the cause of tubes becoming dim with usage. If any of our readers have found a rejuvenation procedure that achieved good results, please let us know.

If rejuvenation is not a panacea, can anything else be done about magic eye tubes that are getting dim? In a MAARC newsletter, Charlie Rhodes suggests adding a tiny dedicated power

supply just for the magic eye tube. With a higher anode voltage, the glow of the tube will brighten. To accomplish this, feed the output of one of the rectifier tube plates to a string of silicon diodes (e.g., two or three 1N4007s). To equalize the voltage across these diodes, parallel each diode with a 1-Meg resistor or a 0.005 μ F, 1000-volt disc ceramic capacitor. Connect that string to an electrolytic capacitor of about 5 μ F at 450 volts. Feed the filtered output to the magic eye tube anode. Use a voltage divider if the display is *too* bright. Ludwell Sibley wondered whether the eye tube might even work without the separate rectifier and filter—just tie its anode to the rectifier cathode. Operating the tube at a higher than rated voltage will likely shorten its life, though. Be sure to put a note in the cabinet explaining what you did. If a future owner decides to replace the dim tube with a new good one, it will be necessary to remove the temporary power supply and restore the original hookup and lower voltage.

The 6E5 and 6U5 magic eye tubes are interchangeable. The only difference is that the 6E5 will close on a weaker signal than the 6U5. A low-cost substitute for either is the type 1629 tube, which is just like the 6E5 or 6U5 except that it has an octal base and a 12-volt filament. Some writers have proposed using a small add-on filament transformer to supply the 12 volts for the 1629 heater, but Ted Hannah reports that the 1629 works quite well on 6 volts, although it takes longer to heat up. You can make an adapter to convert the octal base to a 6-pin base, or you may be able to purchase a ready-made adapter. For a time Antique Electronic Supply offered such adapters. 1629 tubes were used in some pieces of test equipment, such as EICO signal tracers, and since these signal tracers were typically not used all that much, the eye tubes are often almost as good as new. Since beat-up signal tracers often sell at MAARC auctions for just a dollar or two, this is a good way to pick up magic eye tubes cheap.

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6ME5 tube, Sep88: 3
6X6 tube, Jul02: 19, Jan03: 7
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Increasing brightness, Jul97: 15
Repairing inoperative eye tubes, Jan85: 3
Replacing 6E5 with 1629, Nov84: 5
Replacing 6E5 and 6U5, Jun 97: 13
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Tidbit on 6E5 vs 6U5, Mar93: 7
True Green Light for the 1629 Eye Tube, by C. Scarborough, Dec01:11
The Unblinking Eye, Apr92: 13
Wide-Shadow-Angle Tuning Indicator Tubes, by E. Lyon, Jan03: 7

Other Sources

Antique Radio Collector's Newsletter, Vol. 3, #3, 198, p. 6.

Paul Bourbin, "Rejuvenating Tuning Eye Tubes," *Antique Radio Classified*, Aug. 1990, p. 9.
California Antique Radio Gazette, May 1985, p. 18 (substituting 1629 for 6E5).

Jim Farago, "More on Rejuvenating Tuning Eye Tubes," *Antique Radio Classified*, February 1991, p. 16.

Alfred Ghirardi and J. R. Johnson, *Receiver Circuitry and Operation*, (New York: Rinehart & Co., 1951).

Philip Rheinschild, Jr., "The Tuning-Eye Tube in 1930s Radio Sets (Part 1)," *SCARS Gazette*, Feb. 1998, p. 5.

Ludwell Sibley, "A Bit More on Rogers," *Tube Collector*, April 2000, p. 14 (6X6 tube).

Ludwell Sibley, "Restoring Magic-Eye Tubes - Sadder But Wiser," *Tube Collector*, Aug. 2008, p. 25.

Ludwell Sibley, "Some Magic Eye Tubes," *Tube Collector*, Aug. 2003, p.15.

Ludwell Sibley, *Tube Lore*, (Coopersville, PA: Chernay Printing, 1996).

Web pages:

If you do a Google search for "magic&eye&tube" you will get dozens of hits, including tube vendors, projects involving magic eye tubes, color pictures of magic eye tubes, and much more. Here are two:

http://home.pacbell.net/philbert/tuning_eye/tun_eye.htm

<http://magiceyetubes.com/> (30)

Empire of Beaver Dam by Greg Hunolt

The following is mostly taken from the "Souvenir Program and Centennial History of Beaver Dam, Wisconsin" (cited below as 'the Program'), published in July, 1941, by the Historical Committee of the Beaver Dam Centennial, Inc.

The Empire Electric Manufacturing Company, known as the "Battery Works", was organized on August 11, 1925, occupying the buildings of the former Duplex Battery Company on North Spring Street in Beaver Dam.

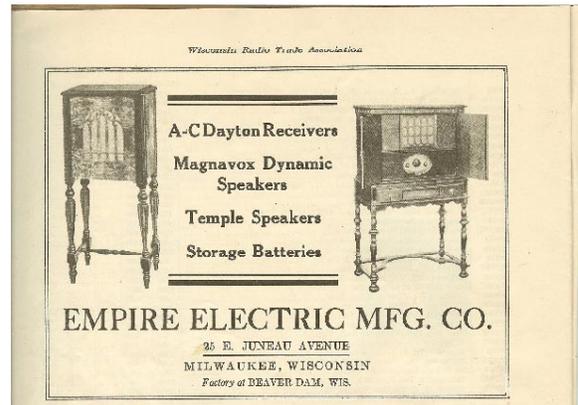
The company began by manufacturing a complete line of automobile, radio, and farm light storage batteries. In 1926 "Empire" radio receiving sets were also made.

The Empire Model Five set shown on page 1 of this WARCI News appears to date from 1926. The front panel is engraved "Empire Electric Mfg. Co., Beaver Dam" and a card inside the lid reads "Empire Electric Mfg. Corp. Milwaukee Wisconsin" and "Factory - Beaver Dam Wisconsin".

The Program notes that drastic price declines during 1926 and 1927 made it clear that only national distribution could insure profitable returns. This would have required more capital than was available at the time, and it was decided to sell the plant. On September 28, 1928, the plant was sold to the Grant Storage Battery Company of Minneapolis, which continued operations for eight months under the name of Empire Battery Company.

The 1928 Exposition Number of the *WRTA (Wisconsin Radio Trade Association) Broadcaster* lists the Empire Electric Mfg. Co. as a Milwaukee distributor of A. C. Dayton sets, with an address of 20 E. Juneau Avenue. It is probable that by 1928, leading up to the sale of its Beaver Dam plant that year, Empire was no longer manufacturing its own radios. Shown below is an Empire ad from the WRTA

1928 Exposition Number, showing the Milwaukee address, but still indicating a factory in Beaver Dam. The ad includes storage batteries that were still produced in Beaver Dam before and after the sale of the plant to Grant.



According to the Program, on June 15, 1929, a new company was organized which bought the Empire plant from the Grant company and operated it under the name Solar Corporation, with headquarters, office, and factory at Beaver Dam. After a modest beginning the company rapidly extended its sales from the original production of thirty-five batteries a day to one thousand a day in 1932. On August 8, 1932, the plant was destroyed by fire, leaving only the brick office which is now [1941] occupied by the Rissman Oil Company. Following the fire the plant was temporarily located in one of the Western Malleables buildings on South Center Street, where it remained until the end of 1932.

The Program notes that the advisability of rebuilding the plant in Beaver Dam or moving to Milwaukee was discussed pro and con. Finally, though reluctantly, it was decided to locate in Milwaukee, where operation began in the new plant on January 1, 1933. Here, when the Program was published in 1941, the Solar Corporation was manufacturing a full line of paints and varnishes in addition to batteries. (30)

News from the Neighboring Clubs

ARCI

Antique Radio Club of Illinois www.antique-radios.org

ARCI's October meet was a great success, with about 100 attendees and 40 seller spaces occupied. The election of officers for 2010 was held. Dave Bart will continue as President, with Jim Novak as Vice President, Keith Schreiter as Secretary and Rudy Hecker as Treasurer.

February 7, 2010 – ARCI Indoor Swap Meet, 7AM – 930AM, People's Choice Contest. Held at the American Legion Hall, 570 South Gary Avenue, Carol Stream IL. Great Boy Scout Pancake Breakfast! See the ARCI website.

MARC

Michigan Antique Radio Club www.michiganantiqueradio.org

MARC's Winter Meet will be on January 30, 2010, at the Costick Activities Center, 28600 Eleven Mile Road, Farmington Hills, MI – see the MARC website for details, or contact Rob Murrell, 248-399-2149. The MARC Spring Meet will be held on April 24, 2010 in Midland, MI.

MARC's 2010 Extravaganza will be held July 9-10, 2010 in Lansing, MI.

NARC

Northland Antique Radio Club www.northlandantiqueradioclub.com

Note the new NARC website URL!

NARC's February Workshop and Mini-Swap Meet will be held on February 7, 2010.

The 2010 Radio Daze will be held on May 21-22, 2010. NARC reports that the May, 2009, Radio Daze in Minneapolis was highlighted by the largest auction in almost 20 years, with 101 registered bidders and 236 items auctioned.

WARCI

Wisconsin Antique Radio Club, Inc., www.warci.org

2010 Swap meet Dates:

January 24 (Weather Permitting!)

March 28

May 16

July 18

October 10

WARCI membership is now 41.

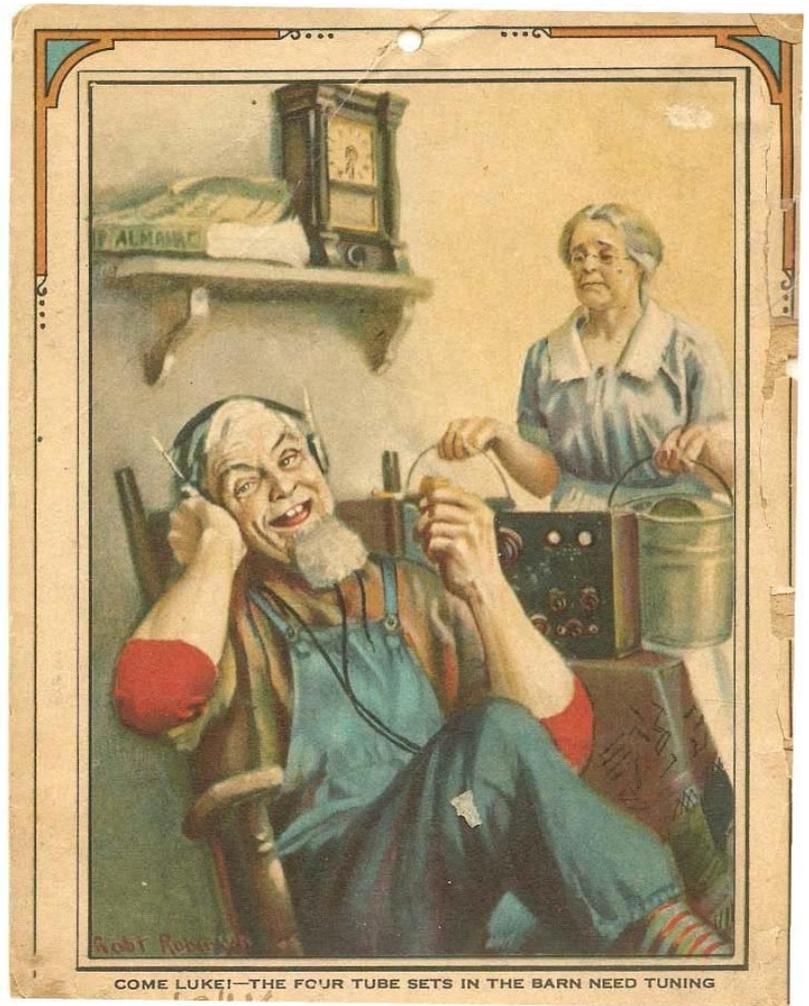
Scenes from the October 2009 Swap Meet

The October 2009 WARCI Swap Meet was very good, with 17 paid sellers and a nice turn-out on a cool day. The meet featured our first Donation Sale (one of the ideas most strongly favored by the recent WARCI membership survey) which was a success, with the sale of 23 donated items generating \$165 for the club.



Odd Bits!

Send in your odd story about strange doings in the world of radio collecting, weird items from old radio magazines – or post cards like the one to the right.



Classified Ads

HELP: Would like to contact owners of 1920's battery sets, literature, and equipment made by Globe Electric Company of Milwaukee, WI, to survey existing model types and variations for development of a company history. All responses will be kept confidential. Thanks. Glenn Trischan, P.O. Box 240022, Milwaukee, WI 53224. E-mail: gnets@worldnet.att.net.

WANTED: Any set made in Plymouth, WI, by the Plymouth Radio and Phonograph Co. – Greg Hunolt!

Remember that classified ads up to ¼ page are free to WARCI members.

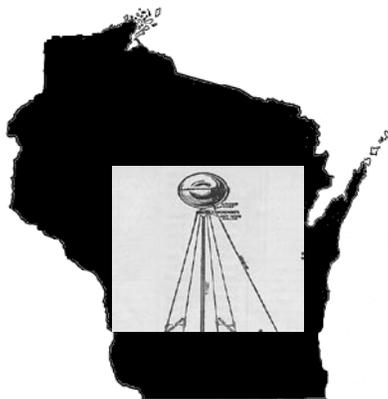
The cut-off date for all newsletter material is about the first of the month preceding publication of the next newsletter (e.g. April 1 for the May issue). Send ads by email or letter to Greg Hunolt, WARCI News, at ghunolt@excel.net or N5412 State Hwy 57, Plymouth WI, 53073.

**Wisconsin Antique
Radio Club, Inc.**
c/o Greg Hunolt
N5412 State Hwy 57
Plymouth, Wisconsin 53073

January, 2010

Return Service Requested

TO:



Wisconsin Antique Radio Club, Inc.
To preserve the History and enhance the Knowledge
of Radio, Television, and related disciplines.
