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4

The
Indiana
Historical
Radio Society

BULLETIN



The Bulletin
A publication of the Indiana Historical Radio Society
Forty-nine years of documenting early radio.

ALSO IN THIS ISSUE:



IHRS 50 YEARS



DUO DYNE



WINTER MEET



MICRO AM XMTR

The Indiana Historical Radio Society Bulletin
Winter 2021 – 2022

The Cover: Thank you Bill Morris for the Winter 2021 Bulletin Cover.

The Indiana Historical Society will meet at the La Quinta Inn, Beech Grove, Indiana on February 26, 2022 Meet details are on the facing page.

In This Issue: Ed Dupart describes his restoration of a 1925 Globe DuoDyne battery radio. Page four.

Fred Prohl updates a 1MHz “Next to your radio AM Transmitter” construction project. Page twelve.

2022 Membership dues:

Annual membership (January 1 through December 31) in the Indiana Historical Radio Society is \$15.00. Send your payment written to Indiana Historical Radio Society
to: Don Yost, IHRS, 3814 E 400 N
Windfall, IN 46076.

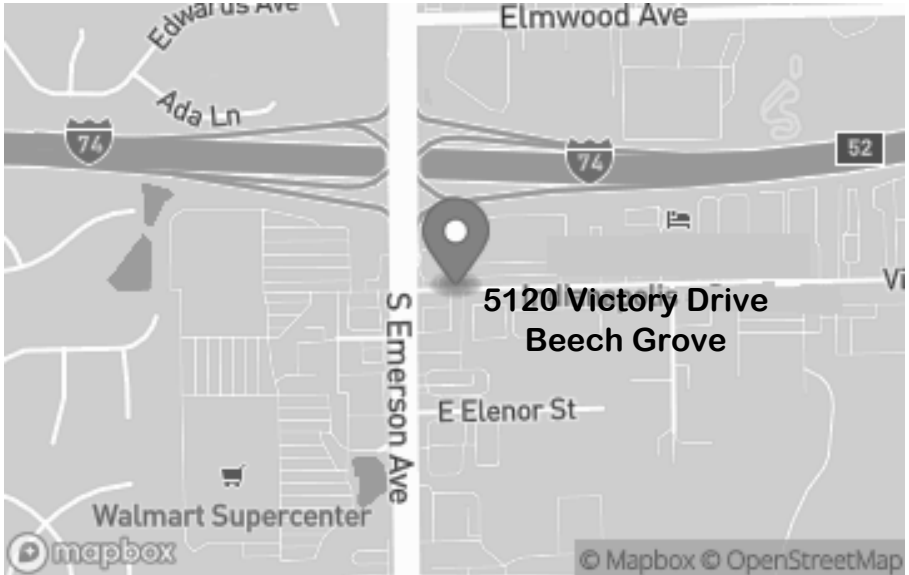
Include your current mailing address, if not on your check, and your email address, if you have one.

Membership questions? Contact Don at:
dearsir@netscape.com or
call him at (317) 443-7241.

IHRS WINTER 2022 MEET

La Quinta Inn, Beech Grove, IN

February 26, 2022- Saturday - 8:00 am to 12:00 noon at the La Quinta Inn, 5120 Victory Drive, Indianapolis, IN 46203



The Indiana Historical Radio Society will hold a winter meet at the La Quinta Inn, Beech Grove.

Early set up for sellers is available from 6 to 8pm on Friday, February 25. Saturday morning set begins at 7am

The February 26, 2022 IHRS Meet begins at 8AM

Seller space is \$15.00 per table—tables are supplied.

General admission is free.

Tables will be available for the display of your radio(s).

Contest:

Category 1—Tube Radios-All makes and models.

Category 2—Transistor Radios-All makes and models.

Donation Auction—End of Meet Donations of radio and radio related equipment will accepted for the auction.

The DuoDyne 770

By Edward Dupart November 13, 2021



Earlier this year I acquired a 1924 DuoDyne 770 four-tube radio from John DenHartigh that was made in Milwaukee, Wisconsin. In all my years in electronics and radio collecting, I had never seen a DuoDyne. In my research it appears that it wasn't a rare radio, so it is a wonder I hadn't seen one. I liked the style of this radio as it is balanced and the panel has an almost mirror finish that is in good shape and is the only Wisconsin made radio that I have. So I was happy to get it.

It wasn't in too bad a shape, the cabinet needed refinishing, but it was all solid wood with no veneer issues and will be an easy job. The radio was missing the switch knob and part of the switch; otherwise it looked complete. One of the small knobs is identical to what the early Crosleys used and my research shows that the switch knob is also

a Crosley knob and I have Crosley knobs, so that made me happy. So, this was a fun radio to restore.

Globe Electric of Milwaukee was started in 1911 by G W Youngs, D. Decker, J H Jugler and manufactured equipment for street lights, street cars, rural light plants and switchboards. They were also involved in the battery and wind power business, so manufacturing radios fit into their business so around 1922 they started building radios and did so through 1925 and then concentrated on making radio parts after acquiring Central Radio Laboratories. Union Battery and Globe Electric merged in 1929 and concentrated on making automotive batteries. Globe-Union was acquired by Johnson Controls in 1978 and still manufactures automotive batteries and specialty batteries.¹ If you want more information on the Globe Electric Com-

pany, please read Dayle Boyce's article in the 2011 edition of the Wisconsin Antique Radio Club, Inc. He has many great pictures and lots of information on Globe Electric and the radios they made.²

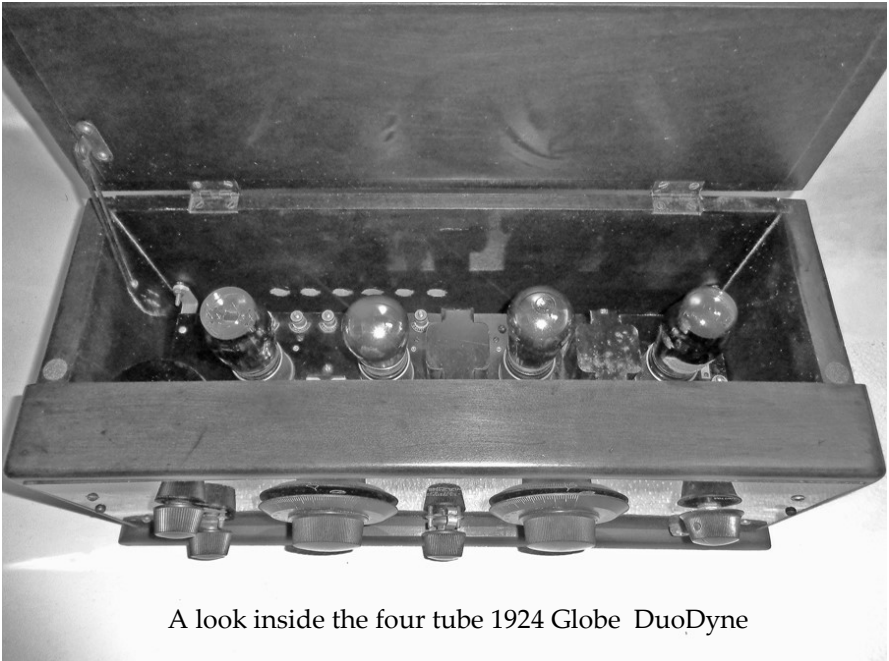
It's time to take a look at this radio electrically and one of the first things I did was check the two audio transformers and I was lucky, both are good. I inspected the connections and solder joints and I found a wire going to the headphone/speaker jack totally disconnected, so I re-soldered that.

I checked the tubes and one was bad so I replaced it and I thought I might as well put power to it and see what happens. Since part of the switch is missing I had to jump that. I used a 6-volt lan-

tern battery and hooked up three 9-volt batteries in series and applied 27 volts to everything.

So here goes, but the 01A's didn't light up. What I discovered was the filament rheostat was open and I could tell it had been replaced with a 1930's style rheostat. It looked fine, but it had a fine break that couldn't be repaired.

Let me digress and tell you what the difference is between a rheostat and a potentiometer for those that may not know. A rheostat uses only two terminals and a potentiometer uses three terminals and some rheostats only come with two terminals and was the case with my bad one. I rummaged around in my junk box and I finally found one that mounted perfect-



A look inside the four tube 1924 Globe DuoDyne

The DuoDyne 770 continued

ly but at 24 ohms was a little high. Five to ten ohms would have been better, but I didn't have any so I used the 24 ohm one and it works.

I hooked up power and it was still dead, but I could tell the audio stages were working because I could get that nice 60-cycle hum when I put my finger on the grid of the first audio tube. With more inspection I found a coil wire had come un-soldered and so I soldered it and applied power and wow! It worked! I picked up our local Sturgis station and one in Kalamazoo.

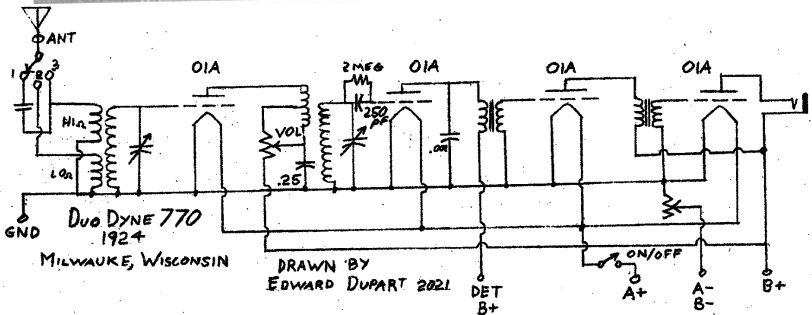
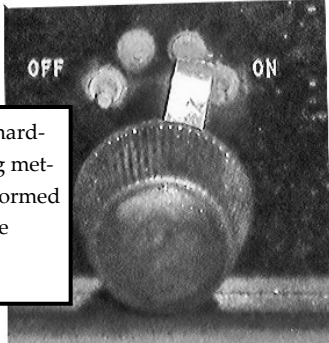
It's time to fix the switch. I dug out a Crosley knob and found a screw that fit it. Next I found a

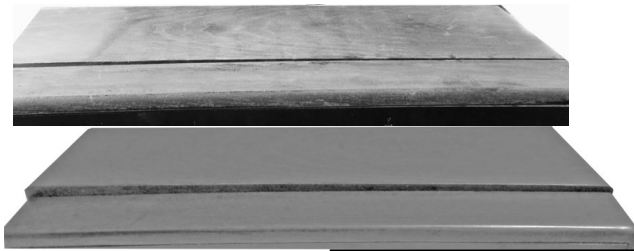
piece of hardened spring metal that I cut down to size, drilled a hole in it and bent the tip that would touch the terminals on the panel. Now I had to find a spring to put over the screw behind the panel so that pressure would be put on the new wiper. After putting my switch assembly together and adjusting the pressure, the switch worked perfectly.

Another oddity was how they had the volume control hooked up. They placed it across the primary of the second RF transformer. Usually it's in the primary of the antenna coil. At maximum resistance the RF energy would be coupled to the secondary for maxi-



A piece of hardened spring metal cut and formed to repair the switch.





I found a matching stain and then used lacquer for the final coat.

mum volume. At minimum resistance or basically a short across the primary, very little RF energy would be coupled to the secondary and would result in low to no volume.

I thought I could find a schematic for this radio and none could be found so I drew one up and is included with this article. This maybe helpful for those of you who may have one of these radios.

The cabinet was easy to do. I lightly sanded it and removed all the old finish, then I found a matching stain and then used lacquer for the final coat and now the radio looks really nice.

With only one RF stage and no regeneration results in a radio with not the greatest performance, but it does pick up a few stations and they are clear.

This is a radio I just like looking at and has an interesting history.

Edward Dupart, November 2021

Footnotes:

1. johnsoncontrols.com/about-us/history

Dayle Boyce, Wisconsin Antique Radio Club, Inc -WARCI, 2011Warci.org/
globe-electric-of-Milwaukee/

0188 zien nyan spen tae

Truly -- The Gift of Gifts
 at
W. A. VOIGT'S
 1109 North Eighth Street
The Tandum one Dial Control Grebe-Synchrophase and Globe DuoDyne Radios

ONE OF THE BEST

Not one of the cheapest but one of the best—that's the No. 770 Globe 4-tube Radio Receiver. It will hold its own with any 4-Tube outfit made. Price stripped **\$55.00**

NO. 815 FIVE TUBE—You will like the clean job of wiring and effective hook-up of this receiver **\$110.00**

NO. 900 Globe DuoDyne 5-Tube receiver is selective, precise in tuning, simple, convenient to operate, richly finished. Operates with either an aerial or loop, stripped **\$135.00**

Sheboygan Press, Sheboygan Wisconsin,, December 2, 1925

HAVE YOU READ?

by Ed Taylor D.Sc.E.E.



Kenneth Strickfaden, Dr. Frankenstein's Electrician

Kenneth

"Mr. Electric" Strickfaden, innovative special effects genius, set the standard for Hollywood's mad scientists. Strickfaden created the science fiction apparatus in more than 100 motion picture films and television programs, from 1931's *Frankenstein* to the *Wizard of Oz* and *The Mask of Fu Manchu* to television's *The Munsters*.

From his birth in 1896 to his death in 1984, Strickfaden's life was filled with adventure. This book details it all, from his early years working in amusement parks, through his Hollywood days, to his lecture tours for science classes across North America. The book also discusses how later films show his influence. It reveals the fate of his collection of equipment, and is richly illustrated with photographs. Appendices provide a selection of notes, doodles, and scribbles from Strickfaden's notebooks, informal sketches, correspondence, documents, and a chronology of his film and television contributions.

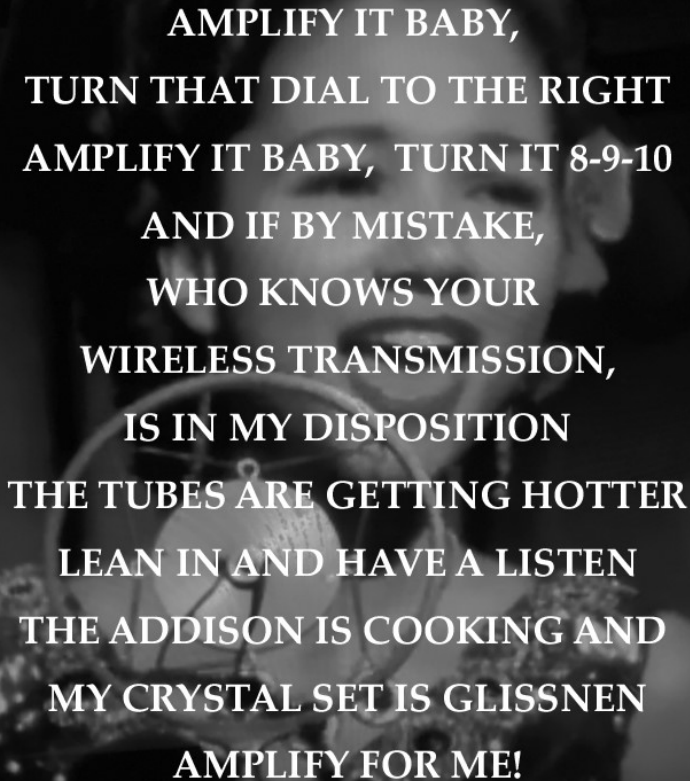
Retired science teacher **HARRY GOLDMAN** founded the Tesla Coil Builders' Association and edited and published the *TCBA News* for 20 years. His work has appeared in *Filmfax*, *Radio Today*, *American West* and numerous other publications.

He lives in Queensbury, New York.

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Dr. Ed Taylor frequently submitted "Have You Read" articles to the IHRS Bulletin. This submission was in the September 2006 issue.



**AMPLIFY IT BABY,
TURN THAT DIAL TO THE RIGHT
AMPLIFY IT BABY, TURN IT 8-9-10
AND IF BY MISTAKE,
WHO KNOWS YOUR
WIRELESS TRANSMISSION,
IS IN MY DISPOSITION
THE TUBES ARE GETTING HOTTER
LEAN IN AND HAVE A LISTEN
THE ADDISON IS COOKING AND
MY CRYSTAL SET IS GLISSNEN
AMPLIFY FOR ME!**

IHRS member, Tom Adelsperger has an interest in stories that take place during the 1920's and 30's. The following lyrics of "Amplify It Baby" were scribed from a song in the TV show "Frankie Drake". The words in the song may not be entirely accurate due to the difficulty of understanding the vocalist.

In season 1 episode 4, "Healing Hands", Frankie Drake is a sleuth for the Toronto police during the 1920's. The show was aired in November 2017.

The question is—Was the song written during the 1920's? Or was it created by script writers for the Frankie Drake show in 2017? The lyrics tell the story.

Editor's answer is on page 18 of this Bulletin.

Around the parking lot at the IHRS Fall Foliage Meet, Riley Park, Greenfield

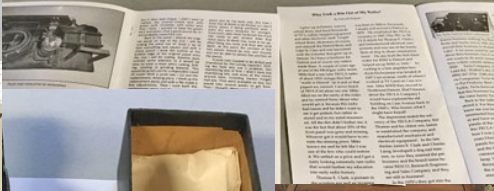


Picture credit to Bill Morris,
pages 10 and 11

Radios on display at the Riley Park Shelter, Greenfield



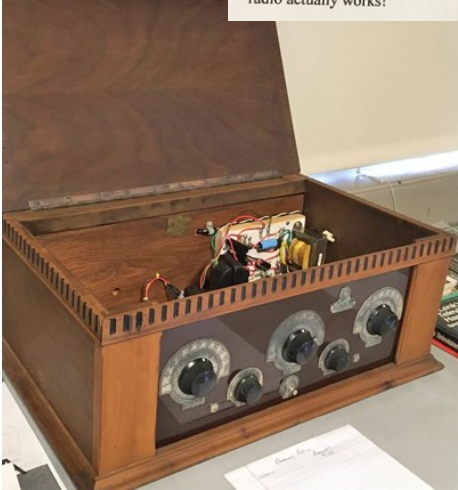
D



C

Baby Grand Crystal Radio

This is the smallest Crystal radio I have seen from this time period. If anyone has seen a smaller one let me know. This radio actually works!



A “Next To Your Radio 1000khz AM Transmitter”

by Fred Prohl, December 2021

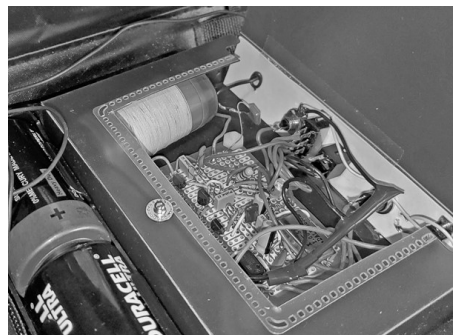


Above: CD audio is being transmitted to a Fairbanks Morris table radio by a Micro Power AM transmitter. Below: the Micro Power 1MHz transmitter circuit board.

Ten years ago or so I built a dozen low powered, single frequency, AM Radio transmitters using current technology parts. Low power meant, for me, a transmitter that was not intended for the whole house, but a circuit placed next to the receiver.

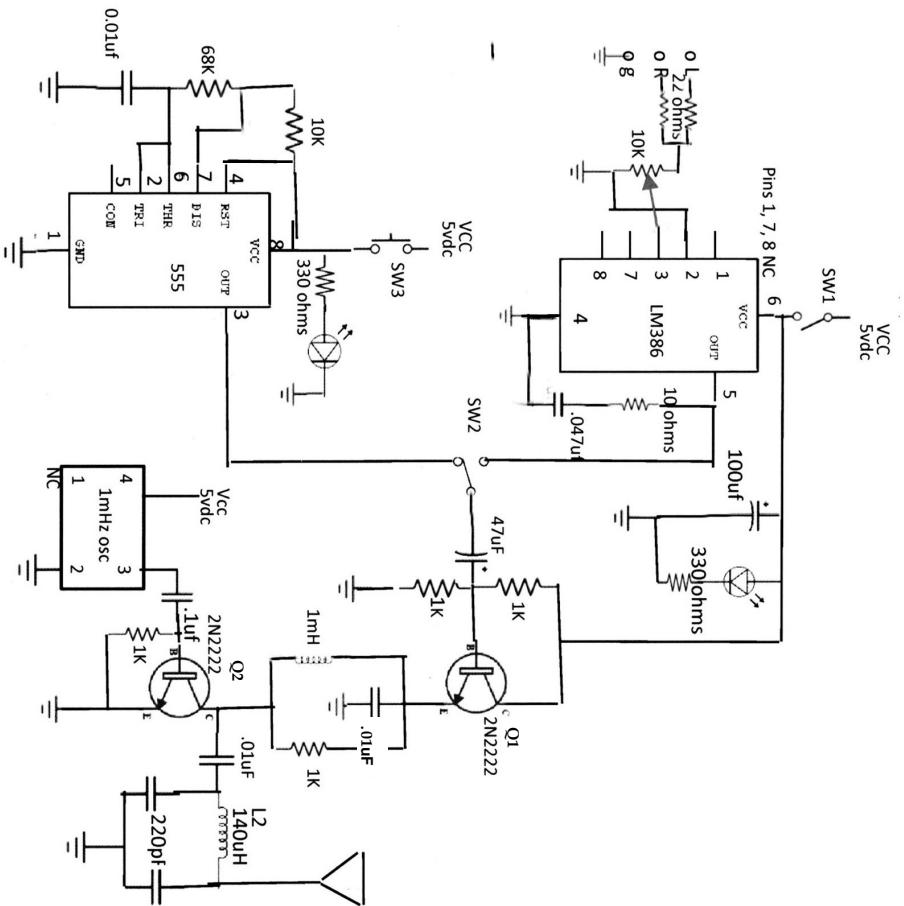
I am now down to one of the original circuits and wanted to build up another supply of the transmitters. (Some of the originals were given to family members and the others sold.)

The original and current micro power transmitters were built from a circuit that appear with a internet search “Micro Power AM Broadcast Transmitter”. The circuit is fairly simple in that it oper-



ates on one AM radio frequency, 1MHZ. It is a low power transmitter, not intended for whole house use.

Yep, If your receiver is close to a 1000KHZ AM radio station, this may not be the circuit for you. I live 20 miles from 1010KHz AM transmitter and have very good separation of transmitting frequencies. But if you live in Chicago



with WMVP or Seattle KZMO, both clear channel stations operating at 1000KHz, you may have a reception problem operating at 1000KHz.

In addition to an audio input, the original circuit included a tone generator for test purposes, a single transistor preamp for a phono input, a 1000KHz crystal oscillator, a two transistor modulator and a tuned antenna circuit. The original circuit operates at 3vdc, a minimum operating voltage. At 3vdc operating voltage the percent modulation was/is approximately 30%.

The plan for an updated "Next To Your Radio AM Transmitter" is:

1. Keep the tone generator using an LM555 timer circuit. (The test tone operates at about 600Hz and has been very useful with radio troubleshooting.)
2. Separate the 600Hz tone input from the audio input. (The original circuit placed the tone on top the audio.)
3. Improve the percent modulation from approximately 30% to approximately 95% by adding a LM386 audio amplifier circuit.
4. Exclude the rarely used phono input.
5. Operate the circuit on 5vdc battery cellphone power bank tech-

nology.

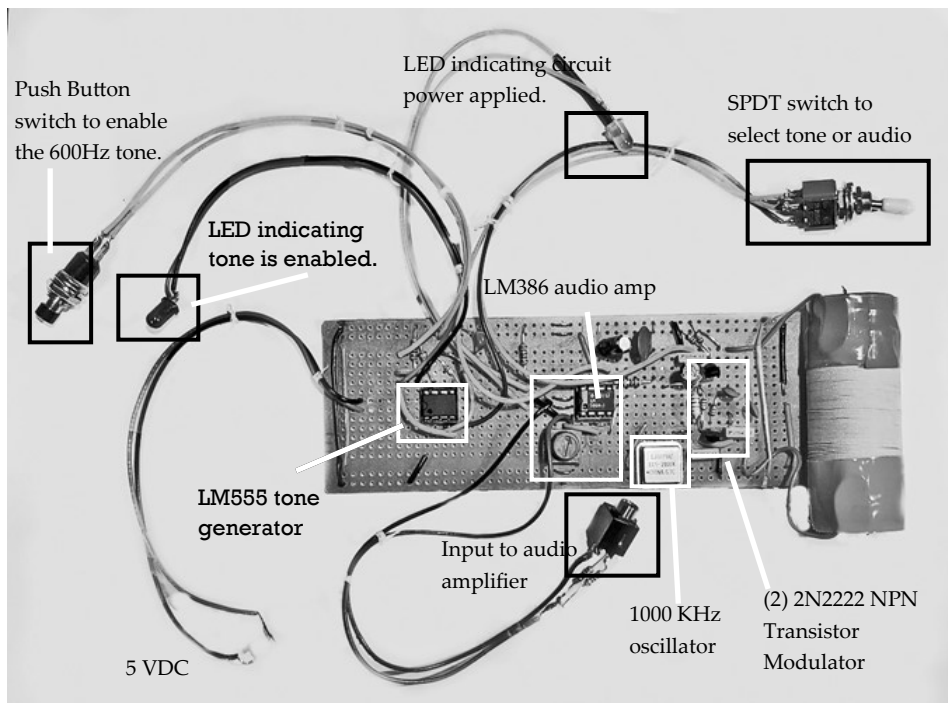
The circuit for this design consists of an LM386 for audio amplification, an LM555 timer circuit for a test signal of about 600Hz, a 1MHz crystal oscillator, a two transistor modulator, and a tuned output antenna.

The PC Board

For simplicity, the circuit is assembled with block diagram construction. The transmitter circuitry flows left to right. The circuit board was purchased on eBay at a quantity of 5 for \$13.00. The board is 5^{1/4}" x 2" single sided proto-board, plated on one side. I like this board for it's ample size and a design with parallel rails on both sides and down the center. Very convenient for access to plus and minus voltages.

The LM555 tone generator:

The timer circuit generates a 600Hz square wave, which is not amplified but modulated directly on the 1000KHz carrier. The frequency is determined by the 68K and 10K ohms resistors and a .01microfarad capacitor. If a different tone frequency is desired check *555 astable calculator* (circuitdigest.com) for a convenient calculator.



The tone generator will not operate until SW2 is switched to Test Tone and the red NOPB switch is closed (pushed). The PB switch applies VCC to turn on the oscillator, intended to conserve battery while the tone is not used.

The LM386 Amplifier

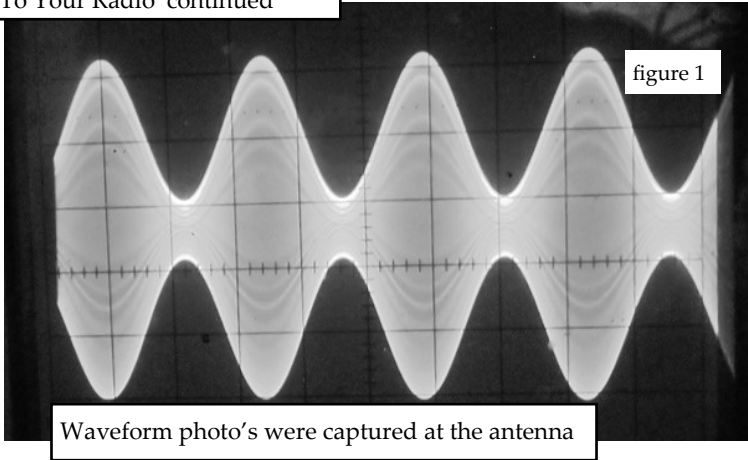
The amplifier circuit provides the needed gain for the incoming audio. The 10K ohms variable resistor controls input audio amplitude in addition to the volume control of the input device. Adjusting both the 10kohm variable and source audio will create the

maximum modulation without distortion.

My original transmitter circuit operates at 3vdc, a minimum operating voltage. 3vdc supply voltage works well with the circuit described in this article but the tone generator 555 and audio amplifier 386 need to be CMOS devices. The lesser expensive TTL devices require 5vdc.

The 1000KHz Crystal Oscillator and the Q1, Q2 Modulator.

The 1MHz crystal produces a square wave at the power supply voltage amplitude. The 1MHz



square wave carrier is placed at the base of Q2. The amplitude of the carrier is varied by the audio seen at the emitter follower of Q1.

The 1mh inductor, .01uf capacitor and 1kohm resistor in the emitter circuit of Q1 provide wave shaping of the square wave carrier, reducing distortion of the modulated audio.

The Antenna Circuit

The 140uh coil is made of 120 turns of awg 28 insulated wire on a 7/8 OD PVC pipe (in this case irrigation pipe). The antenna wire is approximately 9 feet in length.

Testing the 1000KHz low power AM radio transmitter.

The first test, of course, was “does it work?” The circuit was connected to a readily available 5vdc wall power supply with a

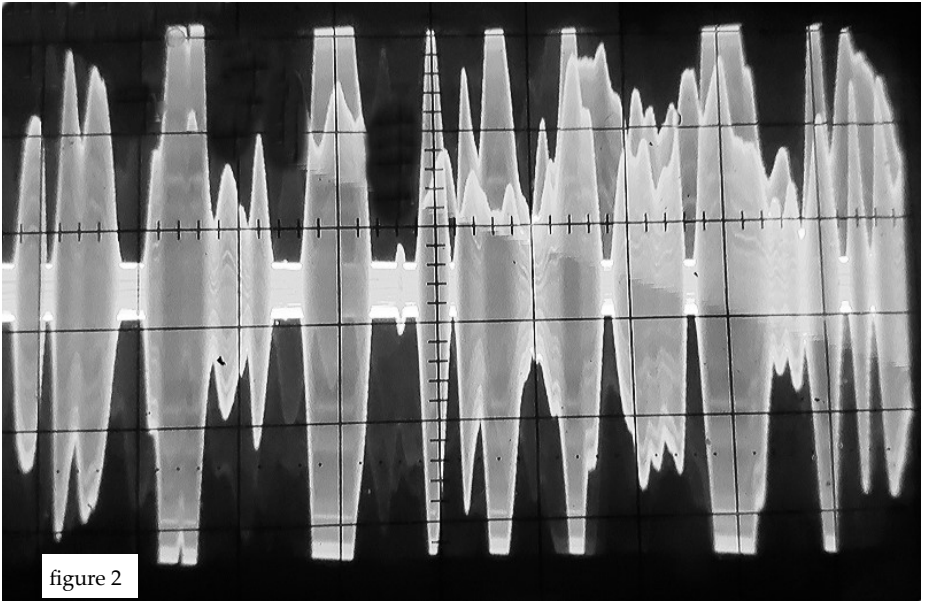
DC ammeter to measure the circuit current. A test frequency of approximately 400 Hz was the audio input. (A convenient audio generator is located on a smart phone at szynlski.com “On Line Tone Generator”).

With your transmitter antenna close to an AM radio, tune to station 1000 . If both radio and transmitter are working correctly you will hear the tone on the radio.

Receiving the audio frequency tone from your frequency generator? Great!

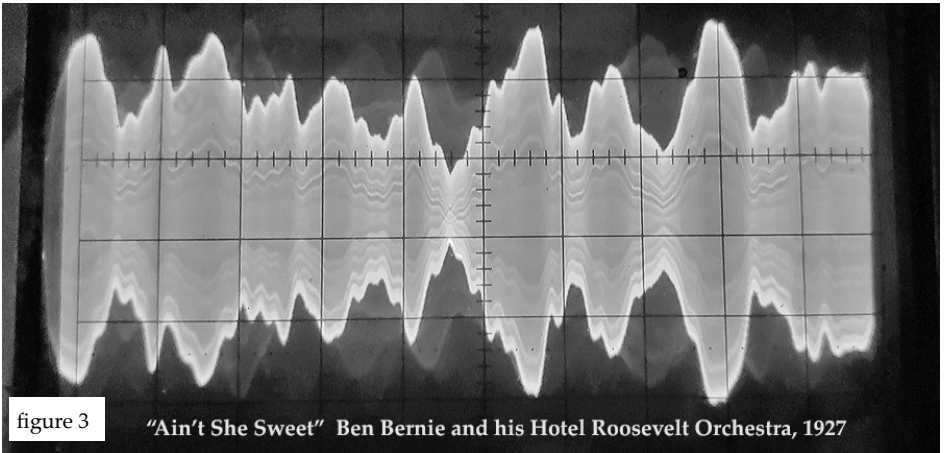
My application, music, and I believe that most who use an AM transmitter with vintage radios is to listen to music, or early radio shows.

One person reported the Next to Your Radio Transmitter worked great for his electric guitar.



In addition to the audio generator, testing of the transmitter was done using a portable CD player. Clipping of the audio, as shown in figure 2, is a common problem resulting in distortion—and is easily heard. The fix is reduce the vol-

ume of the source audio and/or the gain of the audio amplifier on the circuit board. In order to reduce the need of constant adjustment of the variable resistor in the transmitter amplifier circuit it is best to find a mid-range point on the cir-



cuit board variable and depend on the audio input volume control to reduce the distortion. Figure 3 is an undistorted audio from a CD.

The completion of the plan for an updated “Next To Your Radio AM Transmitter “:

1. The test tone generator (LM555 timer) was kept and by way of SW1 and SW2 now allows the independent operation of the audio circuit. When not in use the LM555 will be off, conserving the battery source.
2. With an audio amplitude added the percent modulation has been improved from approximately 30% to approximately 80%. Attempting to increase the input audio beyond 80% resulted in distortion..
4. The phono input was not included in the revised circuit.
5. Operate the circuit on a 5vdc cellphone power bank.

Well, using a cellphone power bank as a 5vdc source for the 1MHz transmitter effectively has yet to happen, because:

Power banks are smart devices, they will not supply a load less than 90 to 100ma and will shut down after 30 seconds of a low load circuit. The transmitter requires 10ma to operate meaning an additional shunt resistor is needed to increase the battery load to 100ma or so. Wasteful.

Most power banks will shut down when connected to a load and charge simultaneously. The exception are power banks designed for ‘pass-through’ operation. Pass through technology allows the power bank to be charged and supply a +5vdc source.

Continued next issue.

Fred Prohl, December 2021

“Amplify It Baby” A 1920’s or 2017 creation??

A newspaper search describes an Addison Battery Radio for sale in the Granville, Pennsylvania newspaper in March 1935. During the 1940’s Addison Radio, Canada, was big in the sales of Catalan Radios. No record was found reporting Addison Radio during the 1920’s.

Conclusion, “Amplify It Baby” was written for the Frankie Drake show in 2017

Alex Whitaker President
2927 South East Street
Indianapolis, Indiana 46225
317-787-2854 ehscott@sbcglobal.net

Activities, business,
administration, & publicity

Michael Feldt, Vice President
12035 Somerset Way, East
Carmel, Indiana 46033
(317) 844-0635 email: feldtm@msn.com

Sites and dates of meets

Don Yost, Treasurer
3814 E 400 N
Windfall, Indiana 46076
(317) 443-7241
email: dearsir@netscape.com

Dues, financial, and address
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Editor Fred Prohl
615 Wren Drive
Franklin, IN 46131
(317) 736-1228 email inhistradio@gmail.com

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Maintain indianahistoricalradio.org

Dr. Ed Taylor, Historian
1790 East 54th St. Apt 112
Indianapolis, IN 46220
(317) 259-4842

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IHRS Web site address: www.indianahistoricalradio.org

2022 – VINTAGE RADIO ACTIVITY – 2022

Check each organization's web page for current Vintage Radio Meet Activity.

Indiana Historical Radio Society indianahistoricalradio.org

ARCI—Antique Radio Club of Illinois antique-radios.org

MARC—Michigan Antique Radio Club michiganantiqueradio.org

CORA Central Ohio Antique Radio Association coara.org

SPARK sparkantiqueradio.com for monthly meetings

CARS—Cincinnati Antique Radio Society Cincinnati-antique-radio.org

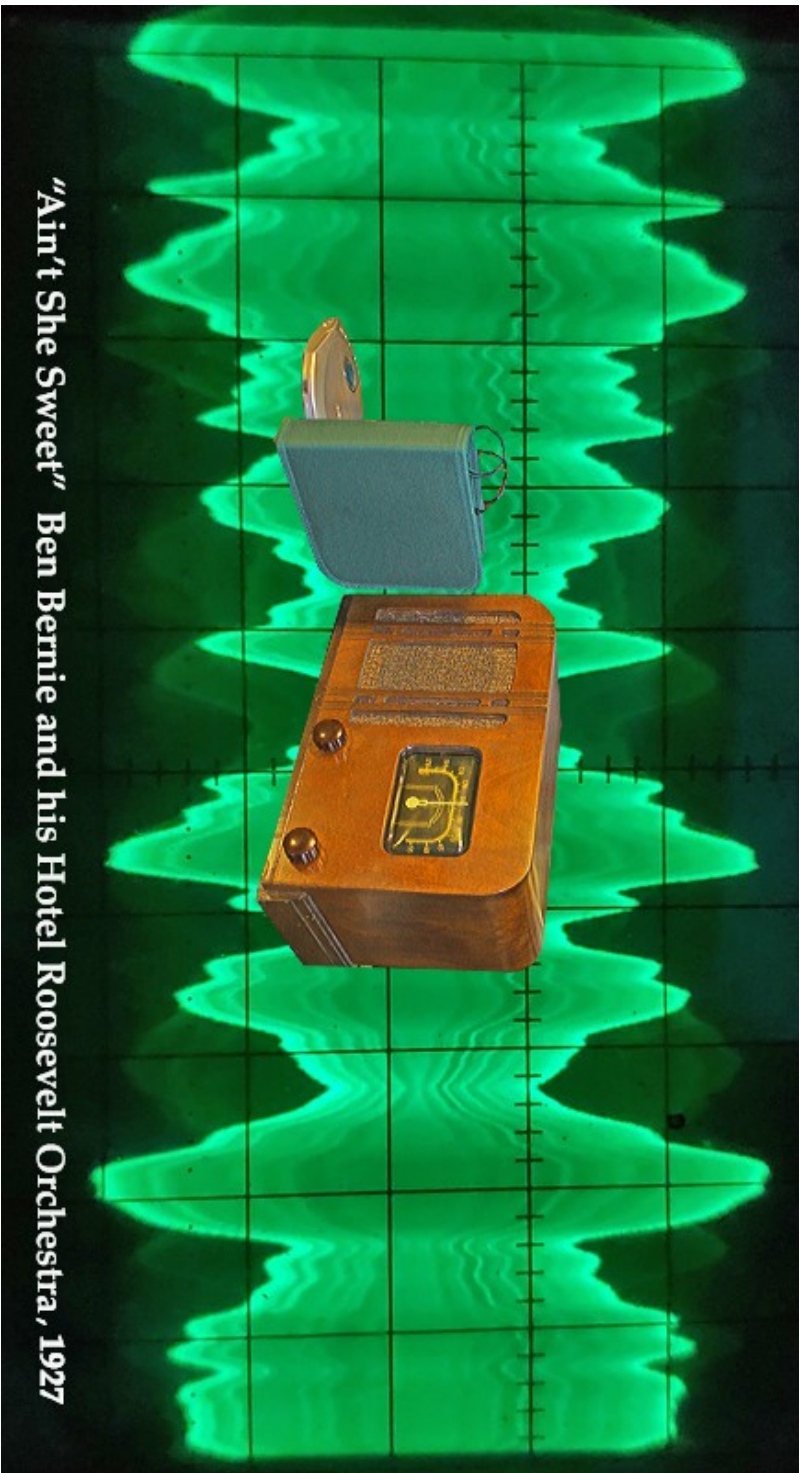
PARS—Pittsburgh Antique Radio Society pittantiqueradios.org

MSARC - Mid-South Antique Radio Collectors

AWA Antique Wireless Association antiquewireless.org

MAARC Mid Atlantic Antique Radio Club

www.facebook.com/MAARCDavidsonville/



"Ain't She Sweet" Ben Bernie and his Hotel Roosevelt Orchestra, 1927

A micro power 1MHz AM radio transmitter page 12