

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

June 2021

Volume 27 Issue 06



MEETING/ ACTIVITY NOTES

Reported by
Marv Beeferman

The ON-LINE Broadcaster

The *Jersey Broadcaster* is now on-line. Over 200 of your fellow NJARC members have already subscribed, saving the club a significant amount of money and your editor extra work. Interested? Send your e-mail address to mbeeferman@verizon.net. Be sure to include your full name.

Thanks again to Dan Rogers for his well-received talk at the May meeting about using a CNC machine to reproduce an Atwater Kent grill front. The main takeaway seemed to be to start off with a less expensive machine to learn the basics, including programming, but an upgrade is in order to do more serious and complicated work.

The May 22nd Repair Clinic featured in this month's *Broadcaster* is indicative that the club is on its way to offer a full palette of events. This month, your Board will finalize the schedule for the rest of the year and it will be published in July. It doesn't look promising for meetings to be scheduled at Princeton in the near future and Summer traffic may make it difficult to have us meet at InfoAge at least for the next few months. Also, we're still working out arrangements for the possibility of Parsippany swapmeets. On the bright side, our Holiday Party in December appears to be a good possibility, our ARRL Field Day is scheduled for June 26th-27th and reservations are being accepted for the Summer Tailgate at InfoAge.

Part of this month's meeting will be set aside for "Hints & Kinks." A few years ago, member Matt Reynolds shared a hint & kink that his great grandfather had submitted and published in an electronics magazine. While researching additional information on this relative, Matt discovered another hint that had been submitted



MEETING NOTICE

The next NJARC meeting will take place on Friday, June 11th, at 7:30 P.M. The meeting will be conducted "on-line" via the video conferencing app Zoom. Information may be found at the club's website (<http://www.njarc.org>) with a link being sent out on the NJARC Communicator prior to the meeting. This month we're asking you to get a little creative again by setting up your "Zoom studio" in order to show off some interesting pieces in your collection during a "Radio Show and Tell" segment. Rather than displaying actual items, you might want to consider using photos instead. A short story describing the significance and/or history of your selection(s) would be appreciated. Nothing new to talk about? Then how about discussing or perhaps demonstrating one of those "hints and kinks" that have simplified your repair or restoration experience?

to the August 1951 issue of *Radio-Electronics*. Matt said that he wished he had the opportunity to meet this "kindred spirit." It would be nice to hear stories from those members who are lucky enough to remember that family member who set them on a road to an electronics career or hobby.

SIMPLE AUDIO PICKUP

Radio programs may be piped from a receiver to any recorder, amplifier, or public address system through inductive coupling between the output transformer of the set and a magnetic contact microphone connected to the amplifier. Tests have shown the strongest field to be at the top of the transformer. The mike may be suspended within 3 inches of the top of the transformer or mounted directly atop the transformer if it is cushioned with a thin layer of rubber or cork.—*Orren Reynolds*

Member Dave Sica noted that on a recent Zoom call, member Joe Bentrova-ta talked about how difficult it was to get a certain radio grille separated from its cabinet. "I've been watching videos from someone on YouTube who is really good at explaining how to disassemble, repair and reassemble furniture. Many of his tips and techniques would be useful in working on vintage radio cabinets." Dave suggests checking it out at:

<https://www.youtube.com/c/FixingFurniture>

In case you missed it, Bill Hemphill recommends an article on a visit to the Museo Marconi in Villa Griffone, Pon-

tecchio, Bologna. Bologna is the birthplace of Guglielmo Marconi as well as the place of his first experiments in transmission. Click on the following link to find the article: [Museo Marconi](#)



Finally, excitement over a possible mission to Venus was stoked by the (now somewhat disputed) discovery of phosphine gas - a possible sign of microbial life - in the planet's atmosphere. The average surface temperature on Venus is 464 °C, the atmosphere is dense with highly corrosive droplets of sulfuric acid, and the atmospheric pressure at the surface is about 90 times that of Earth. One of the major problems of a mission would be instrumentation that could survive such a hostile environment. For an interesting read about silicon carbide radio circuits, I suggest the IEEE article "The Radio We Could Send to Hell." You can read it using the following link:

<https://bit.ly/3yUakPF>

Upcoming Events

June 26th/27th - ARRL Field Day; station W2RTM on grounds of InfoAge
July 18th - Sussex Hamfest (tentative); check SCARCNJ.org for updates
July 9th - Monthly meeting via Zoom; Alan Wolke presentation (tentative)

THE JERSEY BROADCASTER is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are \$25 per year and meetings are held the second Friday of each month at InfoAge or Princeton University. The Editor or NJARC is not liable for any other use of the contents of this publication other than information.

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REPAIR CLINIC THUMBS ITS NOSE AT COVID

By
Marv Beeferman

NJARC members turned out in full force on May 22nd to participate in what president Richard Lee termed a "soft" opening of our Spring Repair Clinic. The majority of members still sported masks as an extra measure of caution but full vaccination seemed to be the rule rather than the exception. As Richard noted, it was great to see people working on radios again as well as renewing face-to-face friendships. Coffee, bagels, muffins and pizza helped fortify the "inner restorer" and good spirited chatter heard throughout the day was indicative that one of the club's more popular activities was given a warm "welcome back." One member upon leaving for the day told me that he learned more at this one session than he acquired during many years of dabbling in the hobby.

Here's a few examples of what took place:

- Bob Bennett worked on a 1940, RCA K60 owned by Rick Menta. This six-tube console covers the broadcast and two shortwave bands and has eight pushbuttons. Initial condition was good to excellent but new filter caps were required to solve a hum problem. A new dial light and power cord brought a smile to another happy owner.

- Phil Vourtsis tackled Brian Whary's Magnavox phono console that was dead upon arrival with a frozen Collaro turntable motor and an amplifier unaffected by its controls. Repairs restored the amplifier but the changer still needs a rebuild. Check out the speaker on this unit and Phil's sophisticated speaker hookup in the photos that follow.

- Tommie Shider's RCA 45 player was mute. Working with Bob Johansen, incorrect connections were restored and a tube replaced and the unit found its voice. Tommie also worked with Kevin McDermott on a circa 1955 Ding Dong School "Slide-O-Matic" record player that also found its voice after a cartridge connection and ground wire were restored. Kevin also continued restoring his non-selecting "Ristocrat" 45 jukebox.

- Dan Gordon and Max This worked on

an RCA HY4 45 phono that had been partly restored. To correct a wow and flutter problem, a new idle wheel was installed and the motor lubricated. It appears that the problem was still present since replacement of the motor mount and platen mount rubbers was suggested.

Max and Bruce Campbell didn't have much luck with the hum problem in an RCA 7-EY-2JJ phono. This player is sometimes referred to as a "Deluxe 3" for use of a 35W4, 50C5 and 12AV6 and bright colors. After replacement of the filter caps and insulating some points of potential shorts, the hum persisted.

- Bob Bennett and Nevell Greenough didn't get very far with a dead Stromberg Carlson model 150 radio. Most time was spent trying to determine the values of suspect resistors.

- Ian Gordon brought an RCA 5-C-581 clock radio to the clinic with a hum. Called the "Debonair," it is known for its 1950's TV-style appearance and unique design. The radio turns on and off by twisting the plastic bezel covering the clock. Ian just requested Bill Inderrieden's help in making a list of replacement capacitors that he planned on replacing himself.

- A dead Midwest 10-38 owned by Irwin Sobelman with unlit filaments presented some problems for Bill Zukowski. This 1937 radio covers the broadcast band, SW and police. The tube sockets were first cleaned and the radio came alive but was oscillating. It was found that the shield of the IF tube was not grounded. Volume was low with a hum. Most caps were replaced with the result of significant improvement. Irwin will replace the remaining caps.

- Ray Chase bought his first Hallicrafters S-40 in 1947 as his first "real" radio. This restoration of one in excellent physical condition was a trip down memory lane. With the power supply caps replaced and a new line cord, the radio plays well but could still use additional cap replacement and a tune-up.

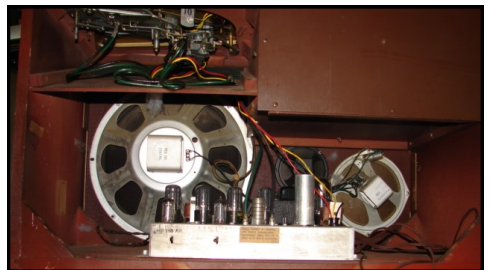
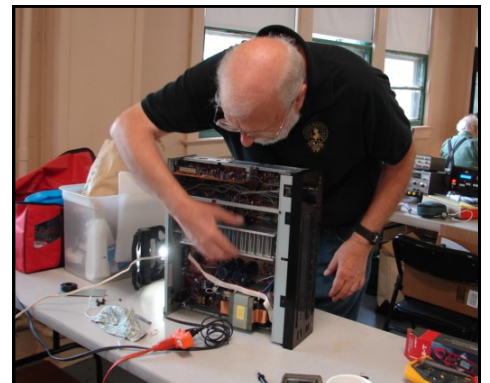
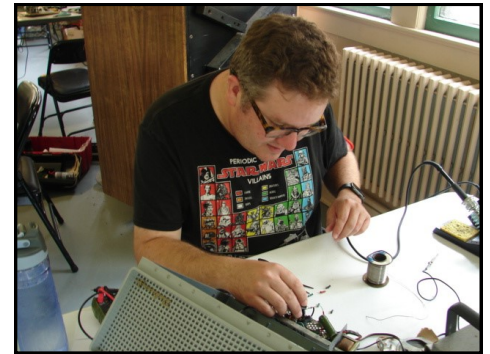
- Your editor worked on recapping the Radiola 61-8 Bakelite table radio that was described in the May *Broadcaster* and presented to RCA Harrison plant employee Bill Myers. Although it has its back panel intact, after studying the schematic, this radio still suffers from the potential hazards of the typical AA5 - non-polarized plug, no fuse, power switch tied to ground and a paper capacitor noise suppressor. I'm considering making this a "safe radio" and addressing this topic in a future *Broadcaster*.



Ray Chase takes a trip down memory lane with a Hallicrafters S-40.



Ian Gordon's "Debonair" clock radio known for its 1950's TV-style appearance and unique design.





Phil Vourtsis tries to deal with what fishermen refer to as a "birds nest."



Our candid camera caught what best should be left without comment.



Member Bill Hemphill posted the following comments on his first NJARC Repair Clinic experience:

This was the first NJARC Repair clinic I have attended. Actually, this was the first NJARC event (other than the swap meets) that I have attended. It was great meeting everyone.

I had brought my two Philco T-9 Trans-World transistor radios to be checked out. While they did work on the lower bands, they seemed really dead on

the two upper bands. Of course conditions have not been the greatest on those frequencies anyway. Bob was nice enough to go over a few items with me. Using a signal generator, we were able to verify that one radio received signals on all bands. But the second radio had something wrong on the upper two bands. Both radios could probably use full alignment. But a quieter location would be needed and several hours to do an alignment. Many coils and capacitors to adjust.

We decided that Bob would take the radio with the problems home and he would do a more thorough review and see what all needs to be done. It may need some of the caps replaced.

I then spent some time wondering around and seeing what other members were working on. A very interesting mix of radios and record players. I found myself helping a member out who needed some extra hands when re-assembling the chassis of a record player he was working on.

Since I have spent the past ten years assembling small radio kits for ham radio, I have only needed a battery powered soldering iron. It was quite interesting to see people working with large soldering guns. I can't remember the last time I used my Weller Soldering Gun.

It was a fun day. And I'm looking forward to when we can have in-person meetings.

Thanks Bill...I think we're all looking forward to that day also!

PUTTING THINGS IN PERSPECTIVE

By
Jim Whartenby

The following article is a result of questions regarding the effect of varying line voltages on tube radios like the Collins and use of a Variac for voltage reduction. This has been an ongoing discussion on the Collins Reflector. Jim felt that the following discussion might be of value to NJARC members....Ed

Given that we all want to preserve the radios we cherish, regardless of who manufactured them, what can one do? Speak-

ing from an engineering point of view, heat is the enemy of all components. The unfortunate thing is that one is stuck with the efficiency inherent in the component and nothing one can easily do will change that. So all we can now do is minimize the waste heat and get rid of it as efficiently as we can so that little damage is done and the equipment life is extended as much as is possible.

My point of view is that the power transformer is the single most costly component. It does two functions - provides tube heater power and the power to operate the vacuum tubes in the various circuits in the radio receiver. These are two very different functions. Heater power is provided for the whole AC cycle while the B+ current is in pulses during a very narrow period of the AC waveform. Current is drawn only when the rectifier diode is forward biased. This occurs every time the filter capacitor is less positive than the rectifier anode plus the voltage drop of the rectifier when it is conducting.

It has been pointed out that the 115 VAC rating of a power transformer primary is a misnomer. It is an assumed average voltage level that in actuality varies over a range of voltages that, by the NEMA convention, the transformer must operate satisfactorily. In 1927, that range was from 103 VAC to 127 VAC. Since 1954, that range has been narrowed from a low of 114 VAC to a high of 126 VAC with the mean voltage of 120 VAC. But because of the NEMA convention, transformers and electric motors still use the 115 VAC label but all will satisfactorily operate over the 114 VAC to 126 VAC voltage range.

It is surprising to me that resistor and capacitor tolerances are easily accepted but that vacuum tube bogie values are a bit less so and transformer tolerances are not accepted at all. What a strange intolerant world we live in!

The first power transformer function is to provide vacuum tube heater power. If the voltage measured at the vacuum tube heater pins is within the vacuum tube bogie values, then all is as it was designed to be. This is typically 6.3 volts rms plus or minus 10%. This is the range of voltages where the performance of the vacuum tube is guaranteed by the manufacturer.

We all accept that tube life is shortened when operated at voltages above the heater voltage bogie and that performance suffers when the tube is operated much below the heater bogie value. So the dilemma is at what voltage is the best compromise between long life and best performance? I do not know the answer to this question. If you do not regularly replace

vacuum tubes for low emission or poor performance then I suspect that the tube is operating as expected and all is good with the world. If you do often replace tubes then I suspect that you will benefit from reducing the heater voltage by reducing the power transformer primary voltage. As discussed on the Communicator, two choices are available to perform this function:

- 1) Get a Constant Voltage Transformer which will automatically regulate the output voltage to within a few percent of the output rated VAC. Some will tolerate a +/- 40% swing in the input voltage and remain within a few % of the nominal output voltage up to the V-A rating of the Ferro-Resonate transformer.
- 2) Use a VARIC and constantly monitor the output voltage and readjust the VAR-IAC as line voltage conditions change over time. I wonder what those who use a VARIAC see in line voltage change when going from receive to transmit and the wife then turns on the electric range? Please share!

Of all of the components found in electronic equipment, capacitors seem to fail the most often, after of course, vacuum tubes. Damage caused by failed capacitors can take out the most expensive single component, the power transformer. One should not overlook the harm cause by leaky coupling and bypass capacitors but the most noticeable problem is the failing filter capacitor.

The power transformer is not designed to provide much more than the rated B+ current from the high voltage winding. A higher or longer current pulse through the winding resistance produces more heat (due to I^2R losses) than the transformer is designed to handle. More heat cooks the transformer and causes a failure. Two ways that a capacitor can cause higher or longer duration B+ current are: a) leakage that caused the rectifier to conduct over a longer period of time, or b) when the capacitor value is increased enough to cause the rectifier to conduct a higher current pulse over a shorter period of time.

So, in essence, the power transformer problem is to provide a tightly regulated heater voltage and a less well regulated B+ voltage that will decrease in proportion to B+ current demand. The answer to this problem can be found in the "Radiotron Designer's Handbook" 4th edition on page 99, figure 3.5. In essence, a small value power resistor is placed in series with each rectifier plate. The resistor will drop the plate

voltage in proportion to B+ current, thus limiting the heat generated by I^2R losses in the power transformer. This will also limit the current through the rectifier and prevent premature rectifier tube failure.

There are enough spare pins on the rectifier tube socket to allow one to move the power transformer high voltage lead over one position and install the resistor with plenty of room to spare. I use a 15 ohm, 3-watt power resistor as an initial value and go up from there as needed. Of course, one could also use a lower wattage resistor so that the resistor will fail open and act as a fuse much like the 30 or so ohm series resistor used in selenium rectifier power supplies that were popular before silicon power diodes were perfected.

Comments and suggestions are welcome.

Editor's Note: I found the following on QRZ.com:

"If you look closely at tube type radios you will see that they operate fine on 110 volts. Certain manufacturers, such as Collins Radio Company, actually rated a lot of the equipment for between 105 VAC and 135 VAC with either 117 VAC or 120 VAC as being 'nominal'. Line frequencies between 50 Hz and 60 Hz are definitely within the specifications."

ON THE HAM CIRCUIT

By
Marv Beeferman

Through the efforts of Steve Miller and John Ruccolo, the club now has a National NC-300 receiver and a pair of Heathkit Apache transmitters (with Mullard EL-34's still in the modulators). Here's John's story on how they were obtained:

A nice young fellow named Chris Tenev donated the items. They were originally from a ham radio estate in Bordentown. NJARC's Steve Miller heard about the vintage equipment from Chris while they were trading more modern equipment. Chris is an electrical engineer and also a ham. He operates in many different modes and is especially interested in VHF and microwave operation.

Steve mentioned the equipment on last week's Tuesday zoom call, which got the wheels turning. I hated to see the stuff end up at the curb or go to the scrapyard. I went to Lambertville on Saturday morn-

ing to pick them up. At the time, I thought it was only one Apache transmitter plus the NC-300 receiver. When I arrived there, I found out there were two Apaches! These classic transmitters weigh about 100 pounds each!

Chris carried them down two flights of stairs (oh, to be that young again!). He borrowed a hand truck from a nearby liquor store to get them from his backyard to my car. You can't make this stuff up! This all happened on very busy Bridge Street in Lambertville.

After loading them up, I drove them down to InfoAge. Richard Lee borrowed Bob Bennett's hand truck and carted them into the NJARC radio shop. Unfortunately, there was no liquor store near InfoAge from which to borrow a hand truck.

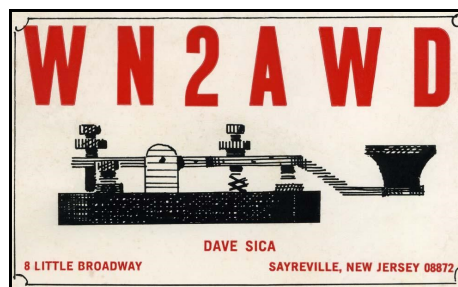
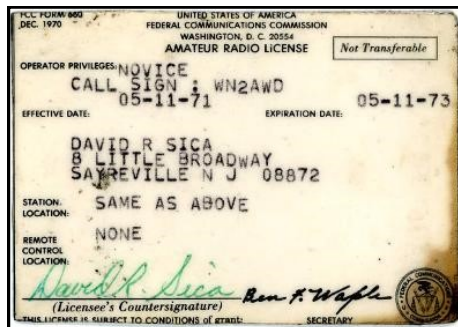


Member Al Klase is going to try to work these units into the existing 24" rack in the middle of the RTM short wave display. Al also noted that the club is planning on upgrading the W2RTM station with a newer power amp that uses more obtainable 3Z500 tubes. The problem is that the Ameritron AL-80B is taller than the existing Dentron model so a taller rack is required. Thus, we're on the lookout for a 19" rack cabinet somewhere between 36 and 48 inches tall. You can contact Al at ark@ar88.net.

In the May *Broadcaster*, we congratulated member Dave Sica (W2AWD) for passing his amateur radio examination. For those who haven't heard it on a recent Zoom meeting, here's the rest of the story as updated by Dave:

"When I got my original Novice license back in 1971, I was issued a call sign WN2AWD. When I recently went to get my Technician license, I thought how cool it would be to have my old call sign back, all 'grown up' and minus the 'N.' I

investigated and found that it was available, so I applied for it as a vanity call sign. For whatever reason, it takes 18 days to issue a vanity call sign, and I had to patiently wait the entire 18 days to finally find out that I was indeed issued my prize. So, fifty years later, almost to the day, I was charmed to know that that WN2AWD finally became W2AWD. As an epilogue, I was happy to later learn that this little saga of mine had inspired member John Ruccolo to do the same thing."



Dave's original license and QSL card from 50 years ago.

As Dave pointed out, John Ruccolo had a similar idea:

"I just couldn't resist a bargain - before the FCC imposes their \$35 ham license change/upgrade fee, I applied for and received a vanity call. Like Dave Sica, I decided to honor my original Novice call from 1974, WN2TPP. The 'K' is from my 1991 Novice call, KB2NYY - a great call if you're a Yankee fan, but I'm a Phillies fan for what that's worth. I originally intended to change my call after I upgraded to Extra Class, but that hasn't happened. My bad - I just couldn't resist the \$35 savings."

A COMMENT FROM ONE OF OUR READERS

With 216 NJARC members, one would think that there would be a backup of member articles and commentary just waiting to be shared on the club's newsletter. Yes, "one would think" - especially with all the talent, technical knowledge, interests and projects that are referenced on the club's Communicator. But unfortunately, except for an occasional surprise that shows up on your editor's email, that's not the case. So, it's nice to receive a comment (I get these about once a year) that proves that at least one person finds something of interest. I recently received the following from member Charles Allan Breen:

This letter is about a year in the making. Doesn't matter - antiques are always "in style." Several issues of that great publication "The Jersey Broadcaster" brought up some categories of firsts in the radio field. Firsts are hard to pin down, since there are so many variables and qualifications that there is almost always an exception. The article on car radios in the *Broadcaster* last Spring mentioned that Chevrolet may have had the first radio, but it could not be confirmed. The quote below may put it to rest for awhile. It makes sense to me, since Citroën was a very successful company in the early part of the 20th century, and introduced many technical features. During the 1930's, with the depression and the death of Mr. Citroën, the company never regained its former dominant position in Europe. Although it continued to be a very advanced (maybe too advanced) automobile. The quote, from page 127 of *Andre Citroën - The Man and the Motor Cars* by John Reynolds (1996, Alan Sutton Publishing), is as follows: "Citroën had been the first motor manufacturer in the world to offer his customers the entertainment of car radios. The Radioën was introduced in 1928 - and had even considered starting up a commercial radio station of his own, a sort of prototype Radio Luxembourg."

I can't offer anything on the first AM broadcast, but the following is from Phil Schaap (Mr. Jazz), radio host on WKCR-FM about the first FM radio broadcast. After the first testing in Pittsburg (not a public broadcast), WKCR-FM, 89.9, made the first FM broadcast in New York at 9:00 AM on October 10, 1941 and has been on the air ever since.

When Charles was doing some additional research, he came across a 1933 *New York Times* article on a television

scanner used at station W2XCR. Charles noted that "I was surprised to see how many television sets existed at the time, but most were home brewed." We'll try to carry the article in a future *Broadcast-er*.

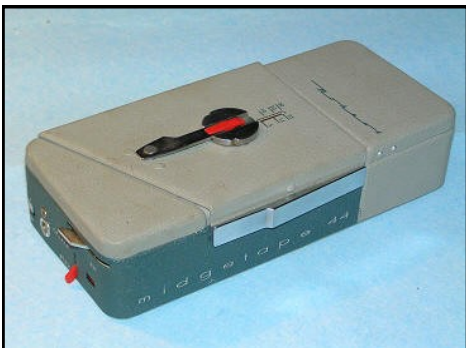
THE FIRST POCKET TAPE RECORDER

By **Marv Beeferman**

Although we're primarily an antique radio club, the interests of our members run the gamut of electronics from radios, to phonographs, to microphones to tape recorders. From time to time, we like to touch on interests other than just radi- os...Ed

As Charles Breen noted in the previous article, "firsts are hard to pin down," but there are some that are recent enough and have significant documentation to label them a true "first." This is the case for the "Midgetape" recorder that was brought to my attention in an April 1955 article in *Popular Electronics*. Prior to 1955, tape recorders were mostly big and bulky. Most "portable" ones were about the size of a typewriter. That all changed when the Mohawk Business Machines Company of Brooklyn, New York released the Model 44 (or BR-1) Mohawk Midget Recorder or Midgetape."

It was announced in *Popular Electronics* as follows: "The man on the road or the one who takes his work home can have a new electronic assistant at his side with the development of the world's first pocket tape recorder, the Midgetape." Besides business dictation, the recorder could also be useful for covert recording by private investigators; it could be concealed in a leather bag with a shoulder harness and hidden microphone to be worn under one's suite. It even had a covert watch and telephone recording microphone as accessories.



The Midgetape used a tape cassette in a metal casing with a 1/4 -inch tape which allowed 30 or 45 minutes of recording on each side of the tape (for 60 minutes and 1 1/2 hours total). The cassette was unusual in having the spools on top of each other (coaxial). There was no fast forward, and rewinding was done manually using a fold-out handle. The recorder came with a microphone and a head- phone jack. In addition to the accessories stated above, a separate amplifier and speaker, a throat microphone, an AC power converter, and a car battery converter were also offered.

The recorder amplifier used three sub-miniature tubes - two CX549DX's and a CK542DX. Two batteries were required; a 30-volt Eveready 506 "B," and a 2X62X Burgess supplying 1.5 volts to the filaments and 9 volts to the motor.

The motor battery could last 25 hours and the amplifier batteries 60. Recording speed was 1 7/8 inches per second. A battery life indicator went off when the battery had only two hours of recording time left. Weight was three pounds.

The Mohawk Midget Recorder sold for \$229.50 to \$249.50 - a lot of money in 1955 and about \$4,000 by today's stand- ards.. The average weekly salary in 1950 was about \$57, so the cost would be about four weeks pay. If all accessories are in- cluded, the price went up to \$500, about \$8,000 today.

Later models of the Midgetape were fully transistorized and the final model 500 "Professional" was introduced in 1959. There was also a machine based on the Midgetape called the Lafayette Trans- coder that in 1961 claimed to be able to

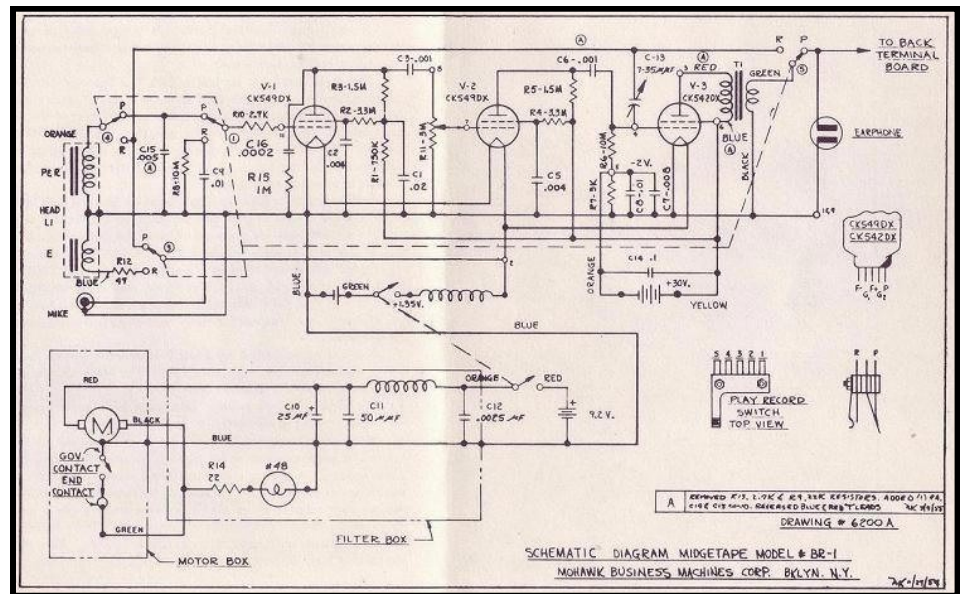


Microphone accessories that associated the Midgetape with "spy" equipment.

record conversations up to 30 feet away.

For an excellent YouTube description of the Mohawk Midgetape, go to:

<https://bit.ly/3fZkOF3>





New Jersey Antique Radio Club's

Summer Tailgate Swap Meet and Ham Fest



Infoage Science History
Learning Center and Museum
2201 Marconi Road
Wall, New Jersey 07719



Saturday July 24th, 2021



Refreshments Available

40 spaces available
\$25.00 for members
\$30.00 for non members
Bring your own tables

Open to the Public

8am to 12 noon
Vendor setup at 7:15 AM
\$5.00 ENTRANCE FEE
CLUB DONATION

For Directions

Visit our website: www.njarc.org
or Mapquest
2201 Marconi Road, Wall NJ 07719

Vendors Make Your Reservations Now!

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