

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

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Volume 12 Issue 5



Reported by Marv Beeferman

**NJARC BROADCASTER
Now Online**

The online version of the NJARC Broadcaster is now available. It is a pdf file in Acrobat format and can be downloaded from the club's website. It can then be printed as 8 individual pages in full cover or black and white, or you can just save the file for viewing. If you don't have Acrobat Reader, you can download the program free from the Acrobat web site. If you desire to obtain the Broadcaster in this format, please e-mail your web address to mbeeferman@cs.com. It is very important that you also include your full name.

By receiving the Broadcaster in this format, you will be saving the club significant copying and mailing costs and will be saving your editor quite a bit of envelope stuffing. In addition, you don't have to wait for the mailman. Here's how it works: One week before the meeting, (Friday, Saturday or Sunday), you will receive an e-mail indicating that the document is available at the club's website. The address will include a code for the month's issue. All that the club asks is that you do not post the file on any other sites. However, feel free to distribute paper copies to other club members in good standing or to friends who are interested in joining the club. However, please do not send them the file.

Last month's meeting included a presentation by Rob Flory (with an assist from Al Klase) which covered the fundamentals of troubleshooting a receiver using an oscilloscope. Rob noted that for battery sets and



MEETING NOTICE

NOTE REVISED DATE

The next meeting of the New Jersey Antique Radio Club will start at 7:30 on Friday, May 5th, at the David Sar noff Library in Princeton, NJ. Contact President Phil Vourtsis (732-446-2427) for directions. This month's meeting will feature the Mike Hammer radio collection auction.

simple receivers, most troubleshooting can be accomplished with a signal generator and VTVM. However, when you move up to more complicated circuits, especially the ones found in multi-band communication receivers, an oscilloscope may be essential. In most cases, the rela-

and to locate sources of distortion.

President Phil Vourtsis would like to extend special thanks to members Al Klase, Dave Sica, Steve Goulart, John Tyminski and Mark Bizuga who supported the NJARC display at the Trenton Computerfest. Phil says that the display included a nice blend of wooden and Bakelite radios, portables, transistor radios, vintage televisions, test equipment, tubes and phonographs. At least a hundred flyers were given out and there were a lot of smiles on the faces of those who saw the display. Considering some of the obstacles that our members had to put up with (a promised display room was not provided, the promoters were insisting on a \$12 entry fee, etc.) Phil notes that everyone had a great time and he expects some new faces at our next meeting.

Ray Chase is requesting a volunteer to check out and repair (as needed) a Philco 40-190 chassis that will be used for an auction donation at the June 4th InfoAge fund raiser. The chassis and speaker are out of the cabinet and look very clean and original. It's not been powered up, but the electrolytics will need replacement. The NJARC will reimburse the volunteer for any parts needed but the work must be completed by mid May. The radio needs to be put in tip top shape. Rider information is available and the chassis can be delivered. Contact Ray at enpnr@erols.com.



Rob Flory examines troubleshooting possibilities using an oscilloscope.

tively modest cost of a good scope is well justified. Having the ability to observe both the frequency and amplitude of a waveform at each stage may save valuable time. For example, an off-frequency output waveform from a mixer indicates that a circuit defect is causing the local oscillator to operate at some incorrect frequency. Having the ability to "see" a signal is also an easy way to check for proper amplification, coupling, detection

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 \$20 per year and meetings are held the second Friday of each month.

The Editor or NJARC is not liable for any other use of the contents of this publication.

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As Ray noted at our last meeting, the NJARC museum at InfoAge is an important part of what volunteers can accomplish. Harry Klancer notes that it's time to schedule people to staff the cottage on Sunday afternoons in May and June. He is looking particularly for members who have never manned the cottage. Harry notes that it's basically pretty easy and you get a chance to talk about your favorite hobby. Signs and descriptive material on most of the radios and artifacts guide the way. Open dates are May 7, 14, 21, 28 and June 4, 11, 18 and 25. Contact Harry at klancer2@Comcast.net.

The May meeting is your last chance for submitting nominations for the June elections. You must be a paid member for 2006 to submit a nomination.

Upcoming Events:

04/28-30: Early Television Convention, contact Dave Sica

04/29: OMARC Tailgate Hamfest, <http://www.omarc.org>
05/05: NJARC monthly meeting; Mike Hammer auction
05/07: Warmister ARC Hamfest; hamfest2006@k3dn.org
05/12-13: Kutztown Radio Meet; www.dvhrc.org
05/13: Vintage Computer Festival; www.infoage.org
05/20: NJARC Repair Clinic (members only); 10am-4pm, Sarnoff Center, Princeton
06/03: InfoAge Fund Raising Gala; www.infoage.org
09/22-23: Kutztown Radio Meet; www.dvhrc.org
10/06: RF Hill ARC Hamfest, Sellersville, PA; kb3cez@arrl.net

**THE MIKE HAMMER
RADIO COLLECTION
MAY AUCTION**

MAY 5th

At the May NJARC meeting, the Mike Hammer radio collection will be auctioned. Mike passed away on April 28th, 2004 and many older members will remember him as the club's first vice president, sitting at the side of founder Tony Flanagan at our Hightstown meetings.

Mike had many interests other than just radios and electronics. By the time he was in his 20s, Mike was racing nitro-methane hemi dragsters that would go from zero to 200 mph in less than 10 seconds. It was during one of those races in South Jersey that he set a national record for the quarter-mile race, crossing the finish line in about 7.5 seconds.

We appreciate the decision of Mike's wife Cynthia to offer his collection to NJARC members where it can maintain its New Jersey roots and be appreciated and preserved by future generations.

There will be a reserve on some of the items. All radios have tubes.

- Colonial 31AC early AC console w/ doors, 2 chassis, electrically restored and working.
- Philco 37-610 console, probably working.
- AK 60 "coffin" with proper speaker.
- Philco table model Predicta, pretty good condition.
- RCA 45 rpm record player, plastic.
- Music Master horn speaker w/wood bell.
- Brandes "Table Talker" paper mache horn speaker.
- Magnovox metal bell & neck for horn speaker (no base).
- Western Electric 518W tall horn speaker.
- Emerson small bakelite table radio w/ white knobs.
- RCA 9X561 "Golden Throat" radio.
- Radiola II w/2 WD-11's, one with a good filament.
- Homebrew slide coil crystal set w/ crystal.
- Two pair of headsets.
- AK 33 w/E2 speaker.
- RCA 47-204 table radio (plastic grill not warped as found in most of these models)
- Two Zenith Transoceanics
- Five-tube homebrew 3-dialer, professionally restored and in excellent condition.
- Emerson bakelite (fair to poor)
- Grebe MU-1 w/chains, very good condition.
- AK E (or E2) speaker
- About 6-8 common pieces of test equipment.

**SIMPLICITY...
EFFICIENCY...
THE MAGNAVOX
TRF-50**

By Marv Beeferman

Except for the occasional stories or suggestions by essentially the same individuals, contributions to the Broadcaster are few and far between. I've been dealing with this issue for over 10 years, and it's beginning to get a little frustrating. One would think that with easily over a thousand radios out there, not to mention all the other ephemera associated with them, one would expect at least a few write-ups or pictures. At the beginning of each year, I'm reminded of a newsletter from another club that was sent to me by Ludwell Sibley. It consisted of a masthead and 4 blank pages, each with a note on each saying how nice it would be to read something from another member. Seems like an easy way to go, especially when you have twice the number of pages to deal with.

While I ponder the above alternative, I thought I'd give you a taste of how easy this stuff really is. Most importantly, we're not looking for the next Hemingway. As with most articles, it all comes down to making connections by using simple resources like the internet, texts, magazines and the help of other club members. Notice how some of the stuff that I found under the lid of this radio also served as a resource. Starting with a seemingly uninteresting radio that I picked up about a year ago, this article shows how a little investigation and initial research connects to all kinds of possibilities and new knowledge. In the long run, isn't that what it's all about?...Ed

I found my Magnavox TRF-50 (Model A, Serial No. 8901) at last year's AWA convention in Rochester. From the outside, it looked like the typical, uninteresting late 1920s TRF set. However, the inside revealed three curious brown pancakes ganged to a single dial, three white ceramic knobs, an internal CM-4 speaker, original

batteries, original instruction manual and various other paperwork. I was hooked and I took it home.

In 1924, Magnavox expanded its line of speakers, amplifiers and tubes to include radios. The first production models, introduced in January 1925, were my TRF-50 with built-in speaker and the TRF-5, an identical set but without the speaker. The TRF-5 sold for \$125 (less tubes and batteries) and the TRF-50 sold for \$150.

On the outside, the TRF-50 and TRF-5 look more like 1928 sets with feet, pilasters and heavy moldings, all in a rustic, dull walnut finish. But the elegant chassis design and workmanship shows emphasis on production engineering rather than hand assembly of stock parts. Most were



made by or expressively for Magnavox - audios, capacitors, tube sockets and variometers. Its one-dial tuning is almost unique for 1924.

1924 was also the year when the Superheterodyne began setting performance standards. While most manufacturers struggled for modest improvements in ordinary circuits, Magnavox brought out its "highly perfected tuned radio frequency circuit," which might compare to the difference between a 286 and 386 processor-driven computer.

The TRF-50 tunes with variometers, not variable condensers. The result is a much improved sensitivity at low frequencies, with some sacrifice at the high end. Each variometer consists of one fixed and one rotating pair of flat, D-shaped coils

spaced about 3/16" apart. Each section is a flat spiral of 30 turns of silk-covered #24 or #25 wired, contained between two bakelite stampings, one about 1/6" thick and one much thinner. The variometers are held together by a few metal clips at the edges. It appears that some strong adhesive might have been used to make the turns more rigid since the are presently not well-adhered to the bakelite but are still quite solid and secure.

The variometers are resonated by condensers that look like trimmers, with slender white porcelain knobs above the chassis for occasional user access. Once the variometers are well-aligned mechanically, there should be only a seldom need to readjust the condensers.

Variometer ganging is accomplished by the use of stamped, heavy sheet metal racks and pinions. Intermittent ground connections among the parts as well as backlash are prevented by two extension springs applying opposing torque to drums on the outboard variometers. It all works beautifully considering we're dealing with an 80-year old design, and the "one-dial" tuning is smooth and easy.

Although my TRF-50 is not yet on line (only for lack of a blown power supply undergoing repair), past restoration information and the excellent condition of my set promises little work. A previous restorer found that his set came alive impressively after some weak solder joints were remelted and the set realigned. This restorer also found that fine tuning was noisy with a tendency to go in and out of regeneration erratically.

Replacing missing anti-backlash springs completely cured both conditions. Fortunately, the anti-backlash springs in my set are both intact and working well.

Another restorer noted that he only had to fabricate one of the fiber gear drives. Again, fortunately, the inductive tuning array in my set appears fully intact and operates smoothly.

Performance reports by other owners are also very encouraging:

"Selectivity from 1000 kHz down is amazing, almost as good as a superhet of the period. It is difficult to judge the top of the range, because I tested this set one mile from a 50 KW, 1200 kHz station and other locals at 1030 and 1060 are almost as powerful (Reference 2)."

"The simple operation of this set does not in any way take away its performance; it is surprisingly sensitive and selective across its tuning range (Reference 4)."

The tuning range of the TRF-50 is limited to a ratio of about 2-1/2 to 1, such as 550 to 1270 kHz, 590 to 1360, etc. according to the limits chosen on the adjustable capacitors. This was no hardship in 1924, although it may have made these sets obsolete soon after. However, an important design change was made in early production which allowed the coil sections to be more closely spaced. This had the effect of widening the inductance range and extended the tuning range appreciably upward. Early versions of the TRF-50 can be differentiated from later versions by the spider coil mounts. The early version has a four-legged spider coil mount; the later version has two straight-edge metal strips supporting the full length of the coil panels to prevent warping.

A schematic of the radio is provided in Figure 1. Variometers V1, V2 and V3 are actually variable inductors. CVs are the adjustable fixed-tuning condensers (sometimes referred to as variable ratio condensers). C1 and C2 are coupling capacitors, C3 and C5 are bypass capacitors and C4 is termed a "grid condenser."

The high gain of the TRF-50 at low frequencies is due to the large inductance of the variometers when set for maximum, about three times that normally used with tuning condensers. The three adjustable fixed-tuning condensers (CVs) are correspondingly small (10-150 mmf). The inherent loss of sensitivity at high frequencies is partly offset by the use of an rf choke (R3) plate load for the first stage, whose gain therefore rises with frequency.

In the unusual second stage, note that a small portion of the variometer serves as a plate load without sacrificing selectivity. Also note that the variometer is grounded - in earlier versions of the TRF-50, there was no ground here. This may have been a production change that added some neutralization to minimize the tendency for oscillations at lower frequencies, not at high frequencies as in normal t.r.f.'s.

The instruction book that came with my TRF-50 recommends a tube compliment of 201A's or 301A's. My set came with the following compliment: 301A detector, 301A first RF amp, 301A second RF amp, 201A first AF amp and 171A second AF amp. Notice that the previous owner has penciled in "C" battery connections for the last two stages, required with a 171A. The fact that my TRF-50 came with a "B" and "C" battery still connected seems to indicate that the owner used this arrangement.

The first TRF 50/5's were fitted with a uniquely shaped, tipped and coated tube produced by Magnavox. Advertising described the tube as follows:

"The most notable feature of the Magnavox Tube consists in the elimination of the grid type of control electrode. Unlike the ordinary storage battery tubes, Magnavox Tubes give the electrons an unobstructed passage between the filament and plate, with the result that the Magnavox has less than one-half the internal capacity of other tubes of similar type."

According to *Tube Lore* author Ludwell Sibley, Magnavox got rid of the grid by replacing it with a pair of metal strips with toothed side surfaces, thereby getting a "grid" effect. Ludwell feels that the

tube was more or less a goldbrick, not lasting in production more than a few months.

The TRF-50 uses the "C" (cabinet) version of the M-4 speaker. This speaker uses an armature type driver which couples a magnetic field to an armature which is again coupled to a mica diaphragm. (Magnavox also pioneered a voice coil driver concept which was the forerunner of the dynamic cone speaker.)

Some additional material found under the TRF-50 lid opens up possibilities regarding how the original owner operated and maintained his radio. Included was an instruction manual dated April, 1925 for a GE Tungar Battery Charger indicating that lead acid "A" and "B" batteries were once used. Also included were instructions for the use of a Kingston (Kokomo, Indiana) "B" current supply unit (110 VAC input) which the owner may have used at one time. But most important was an alphabetical listing of call letters, locations and wavelengths of US and foreign stations from the New Haven Journal-Courier from December 25th, 1925. This pretty much dates and provides the origin of the set.

Magnavox claimed that the Model A Type TRF-5/TRF-50 receivers were the first sets with single dial tuning. Although debatable, the majority of TRF sets in January, 1925 had two to four tuning dials plus additional controls which made station finding a real challenge. The Model A, in contrast, with only two controls and an on/off switch, seems to be the epitome of simplicity for its day. More importantly, its simplicity did not take away from its performance, maintaining a surprising sensitivity and selectivity.

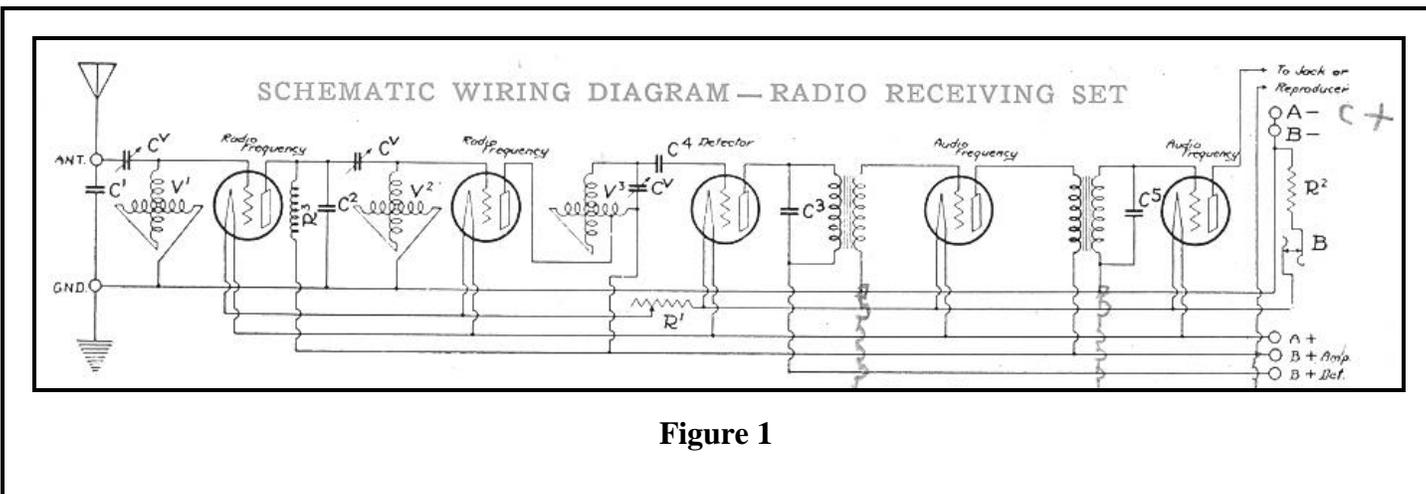
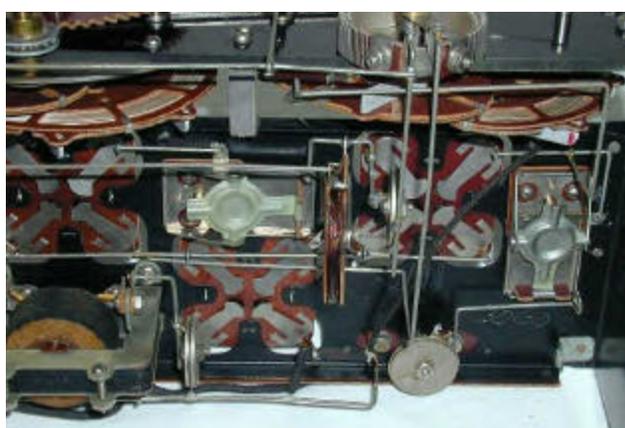


Figure 1



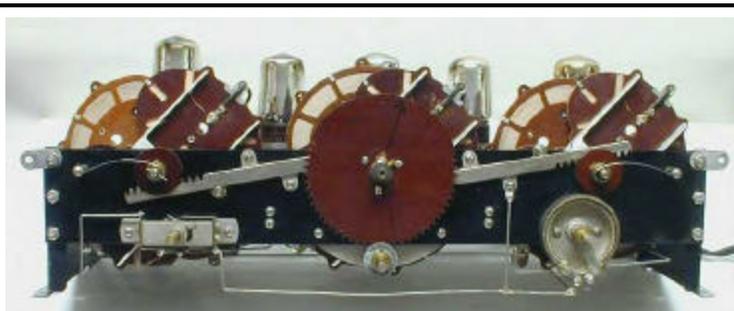
Variometer detail...note the white, porcelain knobs for the "variable ratio condensers"



Underside details



Speaker detail



"Single dial" tuning mechanism detail



The Magnavox "gridless" tube

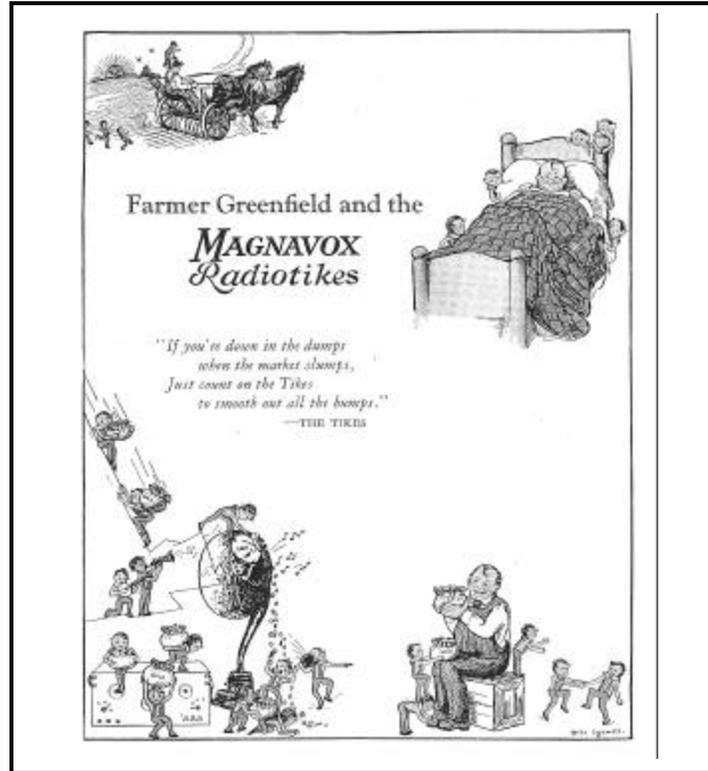
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6. Herbert E. Metcalf, "The New Magnavox Tube," *QST*, March, 1925 (courtesy of Ludwell Sibley)
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THE MAGNAVOX RADIOTIKES

As noted in the previous article, by 1923, Magnavox was ready to enter the radio receiver field and, in January 1925 advertised their two new models - the TRF-5 with a separate PM-4 reproducer and the TRF-50 with a built-in CM-4 driver enclosed in a carved period cabinet.

The advertising to accompany this announcement was built around the Magnavox Radiotikes, created by Helen Cogswell. This booklet of verses and pictures of the Radiotikes (elflike characters with names such as Jazz Tike, Tick Tock Tike and Sailor Tike) was sent free on request or given out by dealers. My reference copy, provided by Marsha and Jerry Simkin, was stamped with the Birch Radio & Electrical Supply Co. of Collingswood, NJ. The accompanying illustrations provide a flavor of its contents.



FARMER GREENFIELD AND THE MAGNAVOX RADIOTIKES

{ I }

When Farmer Greenfield finished planting his crop,
With plowing and hoeing
Both followed by sowing,
He said he'd keep working and never would stop;
For disking and harrowing, hoeing and all,
Would help bring a wonderful price in the fall.

{ II }

His Radio set he'd consult at all hours—
(It always was speaking
The news he was seeking)
To learn from the weather report about showers.
If hail was predicted, he straightway insured;
Of haphazard methods, he long had been cured.

{ III }

Each morning, on weekdays, he got up at four.
Of course he was yawning
On rising at dawning.
Ere breakfast was served he had done every chore.
Tick Tock Tike, on the Radio, gave him the time
And he always had disked seven rounds before nine.

{ IV }

At noon he would stop his work while he ate lunch,
Though loudly protesting
Because he was resting,
With swift-moving jaws, all his food he would crunch.
Then gulping it downward, he'd spring to his seat
While boasting, "No grass shall grow under my feet."

FARMER GREENFIELD AND THE MAGNAVOX RADIOTIKES

{ V }

As evening drew near, he would stop with a sigh,
And coolly disdain
His good wife's complaining
That "Horses and man must rest, or they will die,"
He mended some harness and polished two plows;
Then carried his horses and milked fourteen cows.

{ VI }

When his supper was eaten, he heard Radio—
(From dawn until dark, it
Brought news of the market)
Deliver the market reports—high and low.
At last, when he scarcely could hold up his head,
He wound the alarm clock and climbed into bed.

{ VII }

His crops all grew ripe and they surely looked fine.
He praised, with redundancy,
The wheat, in abundance,
Like oceans of gold in the mellow sunshine.
The prices were soaring, the Marketlike said,
And the work of the harvest was hastened and sped.

{ VIII }

The wheat was all ready to haul into town;
The family was voicing
Its glee with rejoicing
When Radio told them the price had gone down.
Then poor Farmer Greenfield—his work all in vain,
Was sent straight to bed with a terrible pain.

FARMER GREENFIELD AND THE MAGNAVOX RADIOTIKES

{ IX }

'Twas then that the Rad'otikes came to his aid;
With hearts sympathetic
And language prophetic,
They heard of his work and the efforts he'd made.
"We'll help Farmer Greenfield," the message went 'round,
"We'll search through the States till the right price is found."

{ X }

To Broadcasting stations, they flew, everywhere;
Some only curious—
Others were furious,
Saying that Greenfield should have his full share.
"He's earned it," they cried. "He was faithful and true,
Now whether he gets it is all up to you."

{ XI }

"He depended on Radio, right from the start;
On hints as to sowing
And when to start mowing,
To leave the man now, we just haven't the heart."
At last, in Chicago, they offered his price
And the Radiotikes brought the news in a trice.

{ XII }

Whereupon Farmer Greenfield rose up out of bed,
Simply delighted
That things had been righted,
And loaded his wheat, to the city it sped.
At the top of the market, his product was sold
And he thanked all the Tikes who had brought him that gold.

SOME INTERESTING BROADCAST SCHEDULE ARRANGEMENTS

As suggested by
Ludwell Sibley

On December 1, 1921, the Commerce Department restricted commercial radio broadcasting to only stations which held a "limited commercial" plus an authorization to use the entertainment wavelengths of 360 meters and/or the market and weather wavelength of 485 meters. These new regulations meant that stations operating under other license categories - in particular, amateur and experimental - could no longer transmit broadcasts intended for the general public.

The first list of broadcast stations operating under the new regulations was issued by the Bureau of Navigation for March 10, 1922 and included just 67 stations. However, the new broadcasting service grew rapidly nationwide, and only six months later exceeded 500 stations, again triggering concern that there were too many stations on the air.

One of the ways to deal with this huge increase in station density and the resulting interference was the creation of some strange broadcast schedules and arrangements. For example, station WJZ (Westinghouse, Newark NJ) was one of the 360 meter class "A" stations of the second district (which also included New York). The station was given the option of either broadcasting on 360 meters, sharing broadcast time with its less powerful neighbors, or going in with the more powerful class "B" stations of the second district which operated on 400 meters. WJZ decided to stay on 360 meters, broadcasting its bedtime stories every evening from 7:00 to 7:30 PM. Then, the station would stand by for an hour on Monday, Thursday, Friday and Saturday evenings, and for an hour and a half on Tuesday and Wednesday evenings for other class "A" stations in the second district.

It was thought that strict broadcast scheduling and the maintenance of two separate and distinct wavelengths would provide relatively interference-free, continuous entertainment from eight o'clock in the morning to eleven at night (and to mid-

night on 400 meters). Radio Broadcasting News for September, 1922, seemed quite optimistic about the arrangement:

"If all the broadcasters will keep their sending apparatus in first class condition, and the invisible audience will also pay

attention to details and adjustments of their receiving sets, it is thought that very little interference will result from the operation of the Class A and Class B stations broadcasting at the same time in the New York district."

New York and Eastern District

Proposed Schedule for Class A Stations Second District, New York Operating on 360 Meter Wave

Time	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
7:00- 8:00 AM	WHN	WHN	WHN	WHN	WHN	WHN	
8:00- 9:00 AM	TESTING AT THIS PERIOD						
9:00- 9:15 AM	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ	
9:15- 9:45 AM	WBAN	WBAN	WBAN	WBAN	WBAN	WBAN	
9:15-11:00 AM	WHN	WHN	WHN	WHN	WHN	WHN	
10:30-11:00 AM	WBAN	WBAN	WBAN	WBAN	WBAN	WBAN	WJZ
10:00-10:30 AM	WFAF	WFAF	WFAF	WFAF	WFAF	WFAF	
11:30-11:45 AM	WFAF	WFAF	WFAF	WFAF	WFAF	WFAF	WJZ
11:00-11:55 AM	WAAM	WAAM	WAAM	WAAM	WAAM	WAAM	WJZ
11:55- 1:00 PM	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ
1:00- 1:15 PM	WBAN	WBAN	WBAN	WBAN	WBAN	WBAN	
	WHN	WHN	WHN	WHN	WHN	WHN	
1:15- 2:15 PM	WWZ	WWZ	WWZ	WWZ	WWZ	WWZ	
2:15- 2:30 PM	WBAN	WBAN	WBAN	WBAN	WBAN	WBAN	
	WHN	WHN	WHN	WHN	WHN	WHN	
2:30- 3:00 PM	WHN	WHN	WHN	WHN	WHN	WHN	
	WRW				WBS		
3:00- 4:00 PM	WAAM	WAAM	WAAM	WAAM	WAAM	WAAM	WJZ
4:00- 4:15 PM	WFAF	WFAF	WFAF	WFAF	WFAF	WFAF	WJZ
	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ
4:15- 4:30 PM	WHN	WHN	WHN	WHN	WHN	WHN	WJZ
4:30- 5:30 PM	WHN	WHN	WHN	WHN	WHN	WHN	
	WBAN	WBAN	WBAN	WBAN	WBAN	WBAN	
5:00- 5:30 PM	WRW		WRW			WRW	
5:30- 6:15 PM	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ	
6:15- 7:00 PM	WRW	WRW	WRW	WRW	WRW	WRW	
6:30- 6:45 PM	WBAN	WBAN	WBAN	WBAN	WBAN	WBAN	WJZ
7:00- 7:30 PM	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ	WJZ
	WAAT			WAAT		WAAT	WJZ
7:30- 8:30 PM	WHN			WHN	WJZ	WHN	WJZ
	WRW			WRW		WRW	WJZ
	WBS			WBS		WBS	WJZ
	WBAN			WBAN		WBAN	WJZ
7:30- 9:00 PM		WWZ	WRW				
			WBS				
			WHN				
			WAAT				
			WBAN				
			WAAM				
8:00- 9:00 PM							
8:30-10:30 PM	WJZ			WJZ	WJZ		WJZ
8:30-11:00 PM						WJZ	
9:00-10:30 PM		WJZ	WJZ				
10:30-12:00 PM	WRW	WRW	WRW	WRW	WRW	WRW	
	WHN	WHN	WHN	WHN	WHN	WHN	

NOTE:—WJZ, Radio Corp.—Westinghouse Station, Newark, N. J.; WWZ, John Wanamaker, New York; WBS, D. W. May, Newark, N. J.; WHN, Ridgewood Times, Ridgewood, L. I.; WRW, Koenig Bros., Tarrytown, N. Y.; WBAN, Wireless Telephone Company, Paterson, N. J.; WAAT, Jersey Review, Jersey City, N. J. WAAM, I. R. Nelson Company, Newark, N. J.; WFAF, Shotton Elec. Co., Poughkeepsie, N. Y.

Proposed Schedule for Class B Stations Second District, New York Operating on 400 Meter Wave

Time	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
7:38- 9:30 PM			WGY		WGY		
7:40- 9:30 PM		WGY		WGY			
8:00- 9:00 PM					WOR		
8:00- 9:30 PM		WOR					
8:55- 9:30 PM	WHAZ						
10:28-11:45 PM					WGY		

NOTE:—WBAY, American Tel. & Tel. Co. of New York, will also have an evening schedule. The daytime schedule has not been decided. WOR, L. Bamberger & Co., Newark, N. J. WGY, General Elec. Co., Schenectady, N. Y. WHAZ, Rennselaer Polytech. School, Albany, N. Y.

CONNECTIONS



Free exposure for buyers and sellers! Unless requested otherwise, each ad will run for two months in both the *Jersey Broadcaster* and the *Delaware Valley Oscillator*. All buying and selling transactions are the responsibility of the parties involved.

FOR SALE

Check out NJARC's capacitor program for those most commonly needed replacements. Contact John Ruccolo at any club meeting or call him at home (609)-426-4568 to find out what's available. All proceeds go to the club.

The NJARC tube program offers clean, tested, boxed tubes at very reasonable prices with availability at any club meeting (no dealers, please...not for resale). Proceeds go to the club. Of course, donations of radio-type tubes in any condition are welcome. See Gary D'Amico at the next meeting.

Are you aware that NJARC now has a resistor program which includes many commonly needed replacements? Contact Walt Heskes at any club meeting for details.

YOUR FOR SALE AD HERE!

WANTED

2006 DUES

YOUR WANT AD HERE!

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