



The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

February 2013

Volume 19 Issue 2



Reported by
Marv Beeferman

The ON-LINE Broadcaster

The New Jersey Broadcaster is now on-line. To date, 130 of your fellow NJARC members have subscribed, saving the club and your editor a significant amount of money and work. Interested? Send your e-mail address to mbeeferman@verizon.net. Be sure to include your full name.

I was unable to attend January's meeting but I'm sure that Al Klase's talk on how to successfully participate in our BCB DX contest was very helpful. Thanks to those members who sent me photos of their "rigs." I also included some photos of the members-only auction offerings, courtesy of president Richard Lee.

I'm still looking for a few members who would like to act as contributors to the *Broadcaster*; Ray Chase and Dave Sica have already volunteered. Your job would be to send me articles, newspaper and magazine clippings, pictures or old paper items that I could base an article on.

I may not be completely updated on the transformer situation at InfoAge, but it seems that the lightning arrestors to our main 4 KV unit which feeds the site were disconnected at our service entrance resulting in major damage following hurricane Sandy. There also could be further damage downstream of the transformer... perhaps a \$50,000 misunderstanding. Temporary power will still allow us to conduct a members-only repair clinic at the Telephone Exchange Building on February 16th. Our tube party and Armstrong Day is cancelled until further notice. Ray Chase is still planning an InfoAge Radio/Electronics auction for April 27th but the



MEETING NOTICE

As a result of continuing problems with the main transformer at InfoAge, the next NJARC meeting will take place on Friday, February 8th at 7:30 PM at Princeton's Bowen Hall (70 Prospect Ave.). Directions may be found at the club's website (<http://www.njarc.org>). This month, we'll hear a presentation by member Walt Heskes on 1950 radio IF's with particular attention to the silver migration problem and its cure.

date is still tentative.

President Richard Lee reports that the nonprofit group "The Tesla Science Center at Wardenclyffe" was the beneficiary of a \$1.37 million fundraising campaign. The group is dedicated to preserving Tesla's laboratory in Shoreham, Long Island, NY as a museum. As a result, the group is currently in contract to purchase the property. The Science Center was also able to secure an \$85,000 grant which will be reimbursed after the property is sold.

If you're interested in old time radio, you might want to check out performances by Philadelphia's *Hear Again Radio Project*; information is available at <http://www.hearagainradio.com>. The project is a collective of theater artists that explores the medium of radio drama to "entertain and enhance the human experience." Each performance highlights at least two complete episodes with live Foley sound effects, vintage commercials and original music in the style of the original broadcasts.

CALL FOR DUES

Due to significant rising costs, your Board has voted to raise yearly dues to \$25 (\$30 for a family membership). Looking back on 2012, this amount appears to be very reasonable:

- Twelve issues of the *NJARC Broadcaster*.
- A great web site.
- Meetings broadcasted on the web.
- Technical presentations and contests.
- Capacitors, tubes and parts at bargain prices.

- A constantly expanding and improving radio museum.
- Meeting auctions, estate auctions, member-only auctions, "PAL" swapmeets and our yearly InfoAge tailgate.
- Repair clinics
- Our Holiday Party ... and much, much more.

Honorary (H) and Lifetime (L) members are exempt from paying dues. For the rest, dues will be collected at monthly meetings and club activities or you may send a check made out to "NJARC" to our membership secretary: Marsha Simkin, 33 Lakeland Drive, Barnegat, NJ 08005. PayPal is also available at the club's website. Please renew early and avoid the cut-off date of March 31st.

Upcoming Events

February 16th: Members only Repair Clinic at InfoAge Telephone Exchange Building (9 AM).

March 8th: Monthly meeting at InfoAge; Moon Bounce Project talk by Joe Taylor (tentative)

April 20th: NJARC Spring Swapmeet at Parsippany PAL

April 27th: InfoAge Radio/Electronics auction (tentative)

May 3rd: Monthly meeting at InfoAge; Homebrew contest and Basket Case Radio Restoration contest judging

June 14th: Monthly meeting at Princeton; Show & Tell and Estate Planning talk

June 22nd: Repair Clinic at InfoAge

July 12th: Monthly meeting at Princeton

July 27th: Tailgate Swapmeet at InfoAge

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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RADIO REPAIR IN THE "OLD DAYS"

By
Ray Chase

I suspect that we do not appreciate how good we have it when we embark on repairing an old radio on our work bench. Many of us have a good suite of modern test equipment that is easy to use, accurate, reliable and lightweight. But how was it in the 20's and early thirties?

I have acquired early pieces of radio test gear over the years and have often wondered how troubleshooting and repairs were accomplished with such rudimentary equipment? Of course, up until the early 30's, radios were much simpler but it must have been a challenge, especially to a population that did not have the benefit of a lot of education about this new science.

Two typical examples of early test gear were made by Jewell Instruments of Chicago or Newark. Perhaps, because a good deal of radio repair was done by service calls to the home, this equipment definitely has a "portable" feel; in fact, they look a lot like the cases that doctors carried when doing house calls. (Yes, I'm old enough to remember when doctors actually made house calls). I purchased these items some time ago because I liked their look as well as the use of purple velvet in the inside linings - how elegant!

The Jewell Radio Service Test Set No. 117 is quite early. Two thirds of it is taken up by a battery box holding 13 batteries that could supply a wide range of voltages by way of pin jacks on the front. The top part contains a multi-range voltmeter and ammeter along with a four pin tube socket. The voltmeter is rated at 800 ohms per volt; try using that on your AGC circuit! Armed with a dozen or so pin jack test leads that would be stored in the drawer under the top section or in compartments in the lid, one could make a rudimentary tube tester of the top section using voltages from the battery pack in the lower section. Tube test setups are listed in the supplied brochure.

Only battery set, four-pin tubes could be accommodated. The battery pack could also supply voltages to radios under test. Voltages available are prodigious. "A" voltages are 4.5 and 6.0, "B" voltages are 22.5, 45, 90, and 135 and "C" voltages are -4.5, -7.5, -9, and -22.5. I assume that battery prices were more reasonable in the 1920's, as I would surely hate to try to "battery up" this unit today. The label on the top of the case lists the address of the company as Chicago.

The second piece of Jewell equipment is a Pattern 560 Service Test Oscillator. This is another black suitcase unit with purple velvet lined storage compartments. It has a small battery compartment and very complete instructions for use contained in the lid. It uses two type 30 tubes, one as an RF oscillator and the other as an audio oscillator to modulate the RF. It covers the broadcast band in one setting and two IF bands in two other settings. The "Lo Int" setting covers 125 to 185 KHz while the "Hi Int" setting covers 160 to 470 KHz.

The frequency control dial is not calibrated; one must consult a chart in the lid to obtain approximate frequency settings. Two output levels are provided; a low setting that can be adjusted that is normally used and a high level setting that is provided for use when neutralizing Neutrodyne circuit radios. The type 30 tubes are underneath the two chrome plated round caps shown in the photo. The label on this instrument also lists the company as being in Chicago but the instruction sheet inside the lid is marked "Newark, NJ."

The third instrument is an early Hickok tube tester. I saw this set at a Parsippany swapmeet and immediately fell in love with it. It was obviously quite early, had an elegant look with green velvet in the lid and the price was quite reasonable - I bought it quickly. Too quickly, in fact, because when I got it home and examined it closely, I discovered that most of the five panel meters were useless.

Hickok is noted for quality products and overall this instrument is very well made. But whoever manufactured the individual meters used pot metal in the basic meter movement that is now badly distorted so they are not repairable. Since they are custom scaled, it would be virtually impossible to recreate them.

Research points to the model of this tube tester as probably being a 4600, al-

though there is no model number on the Hickok label.

The instrument itself lifts out of its case exposing a large storage area underneath for cables and adaptors. The inside is all lined with that marvelous green velvet. There are three tube sockets on the front; one 5-pin is marked "connector" (I assume for a set test cable), a second 5-pin socket is marked 227 and the third 4-pin socket is marked 226. I did not bother to try to track down any documentation for this tester since it is unusable. I do not know if its markings make the tester designed only for 226 and 227 tubes; perhaps the sockets were available as pre-marked for some other radio. It is however one of Hickok's earliest tube testers as well as a set and general purpose VOM. But you better have a Jewell battery box available for using it because all voltages have to be externally supplied by the way of pin jacks.

I can well imagine a serviceman lugging all these small suitcases into a customer's home, fishing out dozens of interconnecting leads and hooking all this stuff up before being able to start any work. Make any wrong connections and you chance blowing tubes. Forget to shut the

equipment OFF and you will have to buy a slew of new batteries. Repair is now so much easier with much more accurate and dependable equipment.

The Jewel Instrument Company

In researching the Jewell Instrument Co., I came up with some conflicts. They are still in business in Manchester, NH but their web site indicates that they have 60 years of instrumentation experience. The testers I have are clearly over 60 years old...what gives? I also recall visiting the Jewell factory in NH several times as they were a supplier to Aircraft Radio in Boonton, NJ where I worked in the mid 1970's. Jewell was well recognized as a major supplier of aircraft panel electrical instruments and my job as Quality Manager entailed conducting supplier audits.

Google to the rescue! Jewell Electrical Instrument Co. was founded around 1890 in Chicago. In 1928 they were acquired by Weston Instruments in Newark. Advertisements of that period clearly show that Weston-made instruments were being marketed under the Jewell name. From here, the trail is murky. At some later time, Weston apparently divested

itself of Jewell and the name re-established itself as Jewell Instruments in NH.

But there is another interesting bit of history. In 1903, a young man named R. L. Triplett went to work for Jewell in Chicago after graduation from high school. After a few months, he was promoted to Production Line Supervisor. In 1904, at the age of 19, Triplett thought he could make better instruments so he left Jewell, went back home to Bluffton, Ohio and started the Triplett Meter Co. making watch case meters. Triplett introduced the Readrite line of pocket meters. In 1983, after many expansions and having become a recognized name in instrumentation, 80 years of family management of Triplett ended when new investors bought in. Then, in 2007, Jewell Instruments in NH purchased the Triplett line of products. Another company by the name of LFE/api continues in Bluffton, Ohio with their own product line. What goes around comes around!

Have an interesting piece of old test equipment you'd like to share with the club? Send pictures and your write-up to mbeeferman@verizon.net...Ed



No. 117 Radio Service Test Set



Test set battery box.



Hickok Tube Tester



560 Test Oscillator

RESTORING A PHILCO MODEL 60

By Aaron Heskes

Aaron is the youngest member of the NJARC and it looks like he's following in his dad's footsteps in both his antique radio and writing interests. Hopefully, Aaron's article will serve as an inspiration to some of our older members to contribute a short article to the Broadcaster on one of their more recent projects or an interesting topic. As you can see, it doesn't take much...a few paragraphs, some pictures and its done!...Ed

Over the past few weeks, I've been restoring a circa 1934 Philco Model 60 (AM & SW). My engineering teacher had found it in a condemned building along with another later model Philco 60.

When I first saw it, I couldn't tell what

it was. There appeared to be a hole the size of a quarter in the top of the cabinet, and for some reason, someone had decided to paint the cabinet a distasteful blue-green. The chassis wasn't any better, as at least 10 generations of rats had thrived in nests of speaker cone and wires, which I presumed went to the electrolytics.

Working on this radio was mildly confusing since, in some places, I saw too many wires going to one place and in other places, I saw no wires at all. I ended up replacing the transformer, all the resistors, and slowly but surely exhumed all the tar-encased capacitors from their Bakelite tombs. I also made a new dial and patched up the original

speaker. Then, I stripped the cabinet of its loathsome old paint and gave it a fresh coat of varnish.

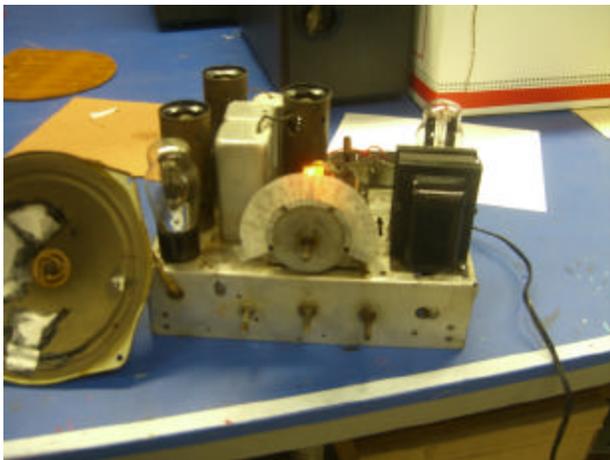
The radio came together nicely and works great on both bands. It is a pleasure to listen to, and I'm happy to see it go to a good home.



A nice job of under-chassis restoration.



"...someone had decided to paint the cabinet a distasteful blue-green."



Bench test - note new transformer and speaker repairs.



The finished product...a job well done.

**NJARC HOMEBREW
EQUIPMENT
CONTEST
AND "BASKET CASE"
RADIO CONTEST**

Now that the BCB DX contest is over, it's time to consider two additional challenges scheduled for 2013 - a homebrew equipment contest and "basket case" radio restoration contest.

The objective of the homebrew equipment contest is to preserve the tradition of building your own electronic equipment. Judging will be held at the regular May meeting.

Category 1 - Primitive Receivers

The signal path of the radio may use no more than two tube functions or two discrete transistors. Solid-state diodes may be used for detection as in a crystal set or reflex circuit. Any convenient power supply may be used, and may contain additional vacuum tubes or semiconductors.

Category 2 - Beginner

Same rules as Category 1. Contestant has never made a serious attempt at building a radio from scratch.

Category 3 - Open

Any recently constructed homebrew radio receiver or transmitter.

Category 4 - Vintage Reproduction

Faithful reproduction of 1920 - 1939 homebrew radios.

Category 5 - Tube Audio Equipment

General Contest Rules:

1. The contest is open to NJARC members only.
2. Entries are limited to "scratch-built" radios as opposed to kits or modified production sets.
3. Entries must have been recently constructed by the contestant. Receivers must be capable of receiving at least one station.
4. Contestants should be prepared to demonstrate their creations at the May 2013 meeting and say a few words about the design and construction of their radio.

5. The membership in attendance will vote for the best entries in each category. Prizes and certificates shall be awarded to the winners.

Basket Case Restoration Contest

This contest was suggested by president Richard Lee and was featured at the 2011 AWA Convention. It may not be everyone's cup of tea, but it's worth a try.

The contest was first established nine years ago by the SQCRA based in Quebec, Canada. Members of this enthusiastic group of collectors take a basket case radio and in a one year period restore it cosmetically and functionally to its former glory. The contest has since gone international with such clubs as the AWA, DVHRC, CHRIS and New Zealand Vintage Radio Society participating for 2012. Radios are judged on eight main criteria, with each criteria scaled from 0 to 10 points. The sum of all the points determines the winner.

Our contest period will run only 5 months with judging at the May meeting. (The time period may be extended if re-

quired.) It will not be based on a point score.

General Contest Rules

1. A minimum of three photos of the "before" condition will be provided - an exterior cabinet view, a rear chassis view and an under chassis view.
2. The restorer shall provide a short, written description of the radio's original condition and challenges faced during the restoration. The more complete the description, the more chance of a higher rating.
3. Photos of the "after" condition of areas of the radio that are not observable (i.e., under the chassis) shall be provided.
4. The radio shall be operational.
5. Since the radios entered are not expected to all be at the same level of disrepair, consideration will be given for the level of difficulty. For example, if a mouse has chewed the oscillator coil and it has to be removed, this represents a level of difficulty higher than simply replacing capacitors to return the circuit to operation.

MEMBERS-ONLY AUCTION



This Hammarlund 180 with clock did not meet its reserve.



Box lot of communication receiver manuals - \$27



This early 1960's GE AM portable did not meet its reserve.



Refinished and recapped 1930's Silvertone - \$45



1952 British "Radio Defiant" made for Co-op Dept. stores - \$65



Transistor portables - various bids.

NJARC 2013 DX CONTEST - SOME TYPICAL ENTRIES



Dave Snellman: To the left is a Braun model T1000 entered in the transistor radio category. This German set was manufactured in 1967 and designed by Deiter Rams. Many of Rams' designs can be found in Apple computers. In fact, a model of this radio is on display in New York's Museum of Modern Art. Dave's antenna is a 26" open air loop known as a Torus Tuner and he was able to pick up two different Venezuelan stations using this setup.

To the right, in the light weight radio category, is a Sony model SRF-37W. The antenna is a Terk 8" tunable loop picked up at Kutztown a few years ago. This set, which Dave says is very sensitive, is powered by the single AAA cell shown in the photo and was used to pick up stations in Venezuela and Anguilla. The set is currently on sale at WalMart for about \$30.



Steve Tetorka says that "this is about as good as its going to get for this contest." Well Steve, in a DX contest, station distance trumps radio looks.



Marty Drift entered with a Hammarlund HQ-129-X and 400 foot long wire antenna.



Mike Gottfried entered using a Hallicrafters S-20 which can be seen at the lower left of his very comfortable and neatly laid out station. Mike used a 500-foot long wire antenna with a high point of about 40 feet and a low point about 10 feet above the ground. Mike said that some of his best DX was PJ in Bonaire on 800 KHz, KOA on 850 KHz and CBV on 980 KHz. During the day, Mike was able to pick up as far north as Boston and as far south as Washington. He found lots of low power stations in the "garbage band" section between 1200 and 1400 KHz. Mike plans to use a crystal set, large loop antenna and, if he can get one, a MF preamp for next year's contest.



Ed Suhaka built a radio especially for this year's contest. It is basically a pretty standard crystal set except that the detector is a 1B3.

A few months ago, at one of our meetings, someone brought up the club's tube program and made a remark about testing tubes. Our tube program coordinator, Darren Hoffman, said something to the effect that he had little desire to test hundreds of 1B3's considering its demand as compared with a 50L6. So, it occurred to Ed that that the DX contest was a golden opportunity to find a new use for the 1B3 and to have a little fun in the process...thus, a set with a 1B3 detector.

Well, the thing actually worked...sort of. Ed's first success was WTTR on 1170 KHz, a 600 watt daytime station with a transmitter a little less than a mile from Ed's location. Ed says that he wasn't sure he expected to receive even that much, "so I couldn't complain."

Ed entered in two categories; one using a 1N34 detector and one using a 1B3 detector. He said that it was a little frustrating hearing stations that he could not claim for the contest. "Before the contest, I heard WBZ and

WGY but could not get them during the contest, even though I could hear the Canadians. I also heard CJBC at 860 KHz but I had to bird-dog that one with a digital radio as it is a French language station and I just could not catch the call letters."



Matt Reynolds suggested that his photo might be lacking a little, but I tried my best to perk it up. Matt entered an RCA 46X23 AM-SW set with a Grundig loop.



Al Klase entered an R-390A and experimental, un-tuned loop. (Nice pink background, Al.)

I TALK TO THE TREES...

Edited By
Marv Beferman

Ideas published many years ago with a very serious intent are fun to re-visit today for their potential tongue-in-cheek qualities. Yet, they are sometimes revived years later, only to be taken up by groups not directly related to the original theme. I received a link to the following information from member Steve Calandra as it appeared on BLDGBLOG ("building

blog") written by Geoff Manaugh (<http://bldgblog.blogspot.com>).

In the July 14th, 1919 issue of *Scientific American* and the July 1919 issue of the *Electrical Experimenter*, articles appeared announcing the discovery that trees can act "as nature's own wireless towers and antenna combined." The conclusion was made by General George Owen Squire, the U.S. Army's Chief Signal Officer. The article points out that Squire made this discovery while sitting in a little portable house erected in thick woods near the edge of the District of Columbia while listening to signals received through an oak tree for an an-

tenna. Squire proposed the theory that trees of all kinds and heights, growing anywhere, "are nature's own wireless towers and antenna combined."

Squire called his discovery "talking through the trees" and said that subsequent tests that he conducted proved that "with the remarkably sensitive amplifiers now available, it was not only possible to receive signals from all the principle European radio stations through a tree, but it has developed beyond a theory and to a fact that a tree is as good as any man-made aerial, regardless of the size or extent of the latter, and better in the respect that it brings to the operator's ear far less static interference."

So how does it work? According to Squire, it was almost the equivalent of just plugging your headphones into a tree trunk:

"It will puzzle the amateur as it has puzzled the experts, how a tree, which is certainly well grounded, can also be an insulated aerial. The method of getting the disturbances in potential from treetop to instrument is so simple as to be almost laughable. One climbs a tree to two-thirds of its height, drives a nail a couple of inches into the tree, hangs a wire therefrom, and attaches the wire to the receiving apparatus as if it were a regular lead-in from a lofty copper or aluminum aerial. Apparently some of the etheric disturbances passing from the treetop to ground through the tree are diverted through the wire - and the thermionic tube most efficiently does the rest."

Still a little confused or skeptical? Squire goes on to offer further clarification:

"Some skeptics have expressed the belief that it was not the tree, but the wire leading to the nail in the tree which was the real aerial. The absurdity of thinking a 40-foot wire could receive the widely differing wave lengths which come through the tree station is obvious, but to set any doubt at rest, the wire to the tree has been hung to the nail by means of an insulator, when the signals immediately cease, only

to come in as strong as ever just as soon as the connection is again established."

In a patent filing called "British Patent Specification #149,917," Squire goes on to explore the somewhat mind-bending possibilities offered by radio transmission and reception through the use of living vegetable organisms such as trees and plants:

"I have recently discovered that living vegetable organisms generally are adapted for transmission and reception of radio or high frequency oscillations, whether damped or undamped, with the use of a suitable counterpoise. I have further discovered that such living organisms are adapted for respectively transmitting or receiving a plurality of separate trains of radio or high frequency oscillations simultaneously, in the communication of either or both telephonic or telegraphic messages."

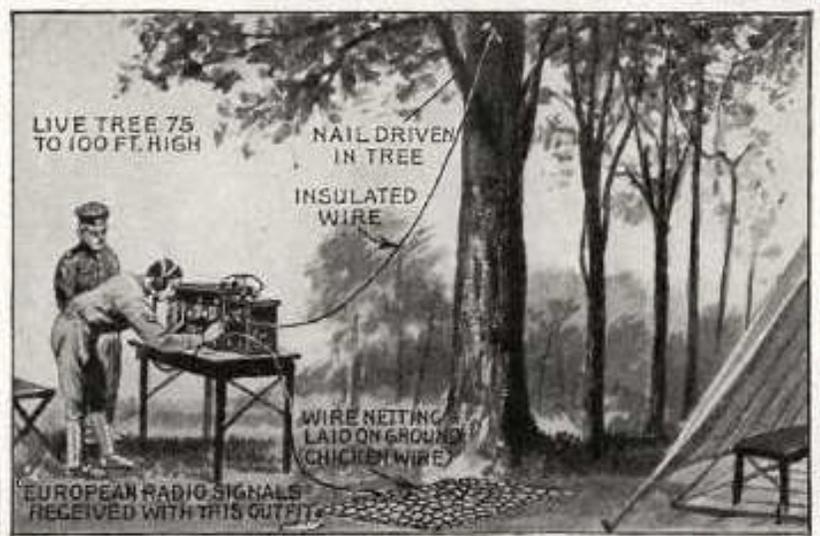
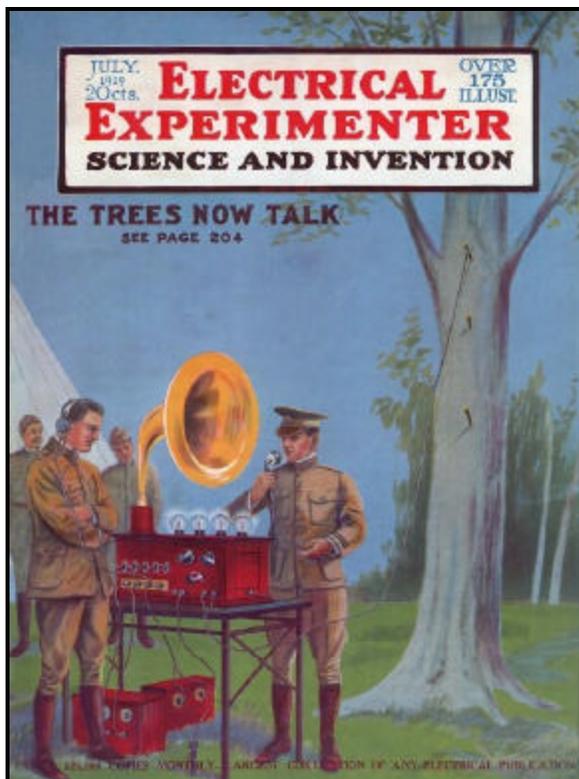
The field of "tree radio work" did not end with Squire. In the January 1975 issue of *IEEE Transactions on Antennas and Propagation*, a group of investigators went down to the rain forests of the Panama Canal Zone to test the performance of conventional whip antennas as compared with the performance of trees utilized as antennas in conjunction with hybrid electromagnetic antenna couplers. The jungle-radio test area consisted of trees wired-up as dual senders and re-

ceivers, considering the jungle as a maze of aperture-coupled screen rooms. The authors specifically cite Squire's work and quote him directly: "It would seem that living vegetation may play a more important part in electrical phenomena than has been generally supposed."

The possible design implications of this work was that an ideal radio-receiving forest could be planted and maintained, complete with spatially tuned "aperture-coupled screen rooms" (trees of a specific branch-density planted at specific distances from one another) to allow for the successful broadcast of messages (and/or music) through the "living vegetable organisms" that Squire wrote about in his patent application.

So, can we look forward to green canopies specifically engineered to send secret messages, weather reports, news, and symphonies throughout the world. Based on a few searches, references to "tree radio work" seem few and far between. It appears that the idea of planting a forest and wiring up the trees has gone by the wayside.

*I talk to the trees,
But they don't listen to me,
I talk to the stars,
But they never hear me.
(Paint Your Wagon)*



Squire named the messages carried over his tree telephone and telegram systems "floragrams." He called the tree telephone a "floraphone" and the tree telegraph a "floragraph." He said his system was utilized during WWI for listening in on German radio communications.