



# NEWSLETTER

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Mercury Amateur Radio Association - MARA - North America - North East

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## OTHER STUFF

E-mail your comments, ideas, or submissions to [marane@mara.net](mailto:marane@mara.net)

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# VIEW from the TOWER



...zzzzz!

## Grandma Mara's RAMBLINGS

Isn't it nice to have spring with us once again? Doesn't it make you just want to get outdoors and do something; like work on your antenna and feed line or at least check it out to see how it managed over the winter months?

My dipole was in good shape (or at least I assumed it was) as I had just put it up in late summer and again in

mid-winter (when the inexpensive shock cords succumbed to a combination of heavy snow and gusting wind). If yours has been up for years without any attention at all then you might want to drop it down to eye level and check things out. Things like the insulators, feed line condition and connections, and support lines. Give it all a good look and see where you might have to make some repairs. If you use rope through tree branches to keep your antenna in the air, it doesn't hurt to ensure that the rope is free to slide and hasn't sawed its way into the wood. You'd think I knew what I was talking about, wouldn't you? Well, I might not know a lot of the small details (or even the big ones!) about how the signal gets from my microphone to your speaker, but I know *enough* to keep my station up to snuff.

So before the grass gets too high and the temperature too hot, take Grandma's advice and get the antenna work done!

## CULTURED CORNER

by ANØNMS

### ANOTHER SPRING HAS SPRUNG POEM

*Spring has sprung  
The grass is green.  
I wonder where's  
My old blue jeans.*

*So I can climb  
Away up high,  
Up to the top,  
Up to the sky.*

*Last time I climbed  
I used the tree.  
The other day  
The cast came free.*

*Next time around  
I'll be smarter  
And work from  
My old ladder.*

# TECH STUFF

By VE1VQ

## THE AUDIO SIGNAL TRACER - PART 1

Items that make it into this column are the things that might grab me with a sudden interest and make me investigate further so I can learn more about the subject. It should be no surprise to anybody who has read this column for a while that antennas and related things are a particular favorite of mine. I also have a fondness for building test equipment both for ham radio and for work. The latter being fire and security related.

One of the handiest pieces of test equipment that doesn't even have any connection to an antenna is the audio signal tracer. Audio tracers are low power (usually a watt or less) audio amplifiers used to trace audio through a circuit.

## SOME HISTORY HERE

From WIKIPEDIA ...

“Usually a very simple device, it normally provides an amplifier, and a loudspeaker, often battery-powered and packaged into a small, hand-held test probe. An optional diode detector is usually also provided, allowing the detection of amplitude-modulated signals.

The technician injects a test signal into the device under test. Then, by using the signal tracer, the tech can follow the signal through the various circuits of the radio receiver. So long as the signal can be heard, the circuitry up to that point is (at least minimally) functional. If the signal disappears, however, a fault can be assumed to be present in the stage of the circuit just passed.”

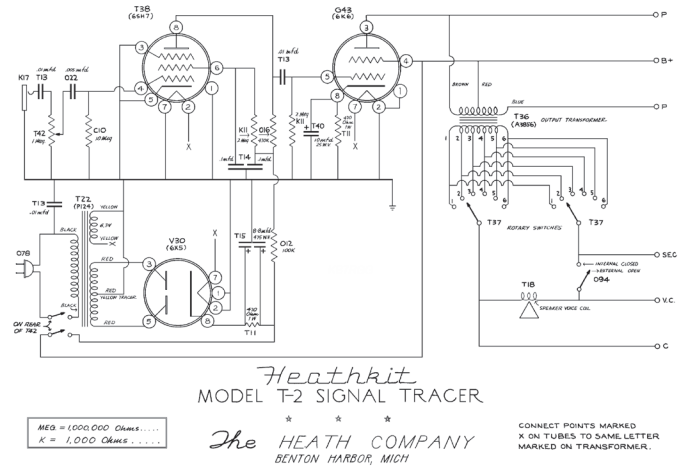
## EARLY VERSIONS

At one time, when tubes were in power, test equipment manufacturers had at least one audio tracer in their product line, either as a stand alone or a combination unit. These devices were considered one of a repair shops main pieces of equipment. Companies such as Heath, Knight, and EICO among others, produced them as kits. In some cases when transistors and later IC's (integrated circuits) took over from the tube, updated versions were produced.

Those early versions were solely for the workbench and were not intended to be portable. The Heathkit Model T-2 shown above and its schematic in the next column is typical of



both kit and commercial versions of the era. One company might develop the original and the others would copy with slight modifications. Why spoil a good thing?



Some manufacturers' later models had a 1629 or similar 'magic eye' tube added to the circuit to indicate the point at which maximum voltage was obtained. With the switch to solid state, audio signal tracers moved to battery operation and smaller sizes, and to true portability.

PHILCO  
DYNAMIC TESTER  
MODEL 7937

New, improved edition of one of the most useful, income-producing test instruments ever developed for radio service engineers.

DEALER NET PRICE \$52.50

Searchlight probe head with handle lens is typical of the advanced post-war features available in Philco Test Equipment.

Advertisement for a Philco 'Dynamic Tester' dating from 1946. This unit was both an RF and AF tracer. Note the handy light at the end of the probe.

## DUAL PURPOSE

Tube type tracers generally came with a dual purpose probe as standard equipment. A switch on the probe would select between AF (audio frequency) and RF (radio frequency). The RF portion sometimes consisted of a tube diode but more commonly was a germanium diode, such as the common 1N34A. A capacitor and a resistor or two completed the circuit. The switch simply bypassed the diode section signal path.

The diode detector is only able to demodulate amplitude modulation but it can still be used to test other RF and IF (intermediate frequency) circuits (you just won't be able to understand what you hear!). If you have one of the older units but didn't get the combination probe with it, an add-on diode detector to broaden its capabilities is easy to construct.



The Heathkit IT-12 Signal Tracer. Note the 'magic eye' tube in the lower left corner.

## USES

- trouble shoot a receiver's audio stages.
- with a diode probe, troubleshoot RF and IF stages.
- trouble shoot any guitar or PA (public address) amplifier.
- use as a receiver project audio stage.
- test microphones and microphone elements.
- with a separate audio source, trace pairs in a cable.
- trouble shoot your phone line for noise and intermittent conditions.
- using the proper pickup, locate wires in the wall.
- anything that involves monitoring or tracing audio.

**ANY TIME YOU WORK ON ACTIVE EQUIPMENT, ALWAYS BE VERY CAREFUL AND OBSERVE ALL SAFETY PROCEDURES!**



**NEXT MONTH - THE AUDIO SIGNAL TRACER - PART 2**

A solid state tracer sold by Radio Shack under the MICRONTA name.

## QUOTE OF THE MONTH

*I have never let my schooling interfere with my education.*

*Mark Twain*

## NOTICES

### MARA NE ANNUAL MEETING

Stay tuned for the date and location of the 2010 Annual Meeting. As soon as it is finalized, it will be announced on the Saturday morning net, on the web site, on the e-mail reflector, and here in the newsletter.

## DI-DAH-DI-DAH-DIT

### CAN YOU IMAGINE?

I had a new granddaughter born on St. Patrick's Day. It got me to thinking about what the world would be like when she grew up. Certainly the world has changed drastically in the years that most of us MARA members have been around the bands. Just looking at technology alone you can see changes we now take for granted that simply didn't exist a few years ago.

Looking at some issues of the old Ham Radio Magazine on CD, like I did the other day, you can see what was considered state of the art in rigs then is considered antique in design and operation now. Units that were thought to be small are huge by comparison with today's multi-band rigs.

Separate transmitters and receivers that were common,

now aren't being manufactured for the ham masses. They are still available for professional markets at very high and largely out of reach

prices. Nearly all rigs are transceivers and many of those (if not the majority) are digital instead of analog.

Consider cellular phones. Who would have thought they would even exist, except maybe in science fiction programs like StarTrek. Look at the shrinkage in the size of those cell phones commensurate with the increase in features. Think about the change in cameras in the last decade. Film that was king for years has now largely disappeared, replaced by pixels, in little over a decade.

Make a guess on what the next twenty years will bring? No way! She will grow up in a world of her own time and technology - and adapt to it (or adapt it to her!) just as we did to ours. A world that will *absolutely* amaze us.

## **Make a guess on what the next twenty years will bring? No way!**

Until next month,  
VE1VQ