



# AWA Newsletter

# 101

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A Member  
of the  
SARL



Antique  
Wireless Association  
of Southern Africa

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## AWA Committee:

- \* President—Ted ZS6TED
- \* Technical Advisor—Rad ZS6RAD
- \* Secretary/PRO—  
Andy ZS6ADY
- \* Western Cape—John ZS1WJ
- \* KZN—Don ZS5DR

## Reflections:

There comes a time in each radio ham's life, I am sure, that one actually sits back and wonders if it is all really worth it to keep on playing with radio's.

I see many times on the SARL website, guys selling their complete stations and I wonder why they would want to do that? Then you hear of hams coming back to the hobby, having kept their licence paid up over the years and having to try and source equipment all over again. I am sure by this stage, it becomes a fairly expensive exercise?

Why would one do that?

Is it because of the many internal squabbles that happen in clubs or on websites, or even on the air? Or is it simply that one becomes "gatvol" to coin the phrase and just needs a break from it all?

I must admit, there have been times when I have thought "to hell with it all, I need a break". But then there is always something that draws me back to it.

Maybe I'm just a glutton for punishment or I have some sort of masochistic tendencies, but I can't seem to get radio out of my blood. I did not know that one could become addicted to RF.

Just as I have a minor addiction, I notice there are some with major addictions who will spend a lot more time than I do on air. Talk about a daily fix, well that certainly seems to be the case.

Some people will do just about anything to get that fix. Buy the biggest and best rigs, the tallest antenna towers. The most powerful linears, that only put out 400 watts.

Go on Dx-peditions, climb mountains or hill tops. While others will do the smaller things like RaDar, QRP rigs in back packs, transmitters in sardine cans. We all get our fixes in different ways and by different means.

I suppose then, the answer to my original question would be, some people get fed up of being addicted to RF and want to be set free, only to find out later on they cannot be free. Its worse than heroin addiction. You just have to have it.

If I have convinced you of this, then you are, like me, really hooked. So sit back and enjoy the trip and get radio active. Your eyes will shine in the dark just like the 6146's in your rig.

Best 73

DE Andy ZS6ADY

## WIKIPEDIA

Experiments on communication with electricity, initially unsuccessful, started in about 1726. Scientists of including Laplace, Ampère, and Gauss were involved. A practical electrical telegraph was proposed in January 1837 by William Fothergill Cooke, who considered it an improvement on the existing "electromagnetic telegraph"; an improved five-needle, six-wire system developed in partnership with Charles Wheatstone entered commercial use in 1838.[18] Early telegraphs used several wires connected to a number of indicator needles. Businessman Samuel F.B. Morse and physicist Joseph Henry of the United States developed their own, simpler version of the electrical telegraph, independently. Morse successfully demonstrated this system on 2 September 1837. Morse's most important technical contribution to this telegraph was the simple and highly efficient Morse Code co-developed with his associate Alfred Vail, which was an important advance over Wheatstone's more complicated and expensive system, and required just two wires. The communications efficiency of the Morse Code preceded that of the Huffman code in digital communications by over 100 years, but Morse and Vail developed the code purely empirically, with shorter codes for more frequent letters.

The first permanent transatlantic telegraph cable was successfully completed on 27 July 1866, allowing transatlantic electrical communication for the first time.[19] An earlier transatlantic cable had operated for a few months in 1859, and among other things, it carried messages of greeting back and forth between President James Buchanan of the United States and Queen Victoria of the United Kingdom. However that first transatlantic cable soon failed, and the project to lay a replacement line was delayed for five years by the American Civil War. The first transatlantic telephone cable (which incorporated hundreds of electronic amplifiers) was not operational until 1956, only six years before the first commercial telecommunications satellite, Telstar, was launched into space.[20]

The conventional telephone now in use worldwide was first patented by Alexander Graham Bell in March 1876.[21] That first patent by Bell was the *master patent* of the telephone, from which all other patents for electric telephone devices and features flowed. Credit for the invention of the electric telephone has been frequently disputed, and new controversies over the issue have arisen from time-to-time. As with other great inventions such as radio, television, the light bulb, and the digital computer, there were several inventors who did pioneering experimental work on *voice transmission over a wire*, who then improved on each other's ideas. However, the key innovators were Alexander Graham Bell and Gardiner Greene Hubbard, who created the first telephone company, the Bell Telephone Company in the United States, which later evolved into American Telephone & Telegraph (AT&T), at times the world's largest phone company. The first commercial telephone services were set up in 1878 and 1879 on both sides of the Atlantic in the cities of New Haven, Connecticut, and London, England.<sup>1</sup>

## CW Activity:

What is it about CW that makes it attractive to some and extremely unattractive to others? Is it the fact that one basically has to learn a completely new way of communicating with others, that actually takes a bit of brain power and a reasonable amount of IQ?

Don't get me wrong, I am not trying to say that if you can't do CW you have a low IQ. I'm really not that interested in getting in to any arguments about anyone's intelligence. But I do find it rather interesting that some people grasp CW easily, while others battle to read or send it.

Personally, I do not fall in to the category of CW being like a second language. I still have difficulty in reading CW at speeds faster than about 12 –15wpm. Most times I have to fill in missing words and hope that I get it right, which seems to work for me.

Is it just that one gets to a stage where it all seems to click and fall into place? It would seem my click has got lost somewhere.

I can comfortably send CW at 17-20wpm, with a few mistakes here and there, but at least its readable at the other end. It's the receiving that does not seem to click.

Many will say of course there are ways to do it, but I would have thought that after being a regular to CW nets and playing on CW for more than 10 years, there should be some reasonable explanation. I am not sure.

There are many programs that have been designed to assist one in learning CW, most of which are easily available off the internet today, as well as some of the older programs available on CD. Many people have said, "don't touch your key until you can

comfortably read at least 12 wpm". Sound advice I would think, but is it always the right advice?

Whatever it is that slows you down on CW, don't let it keep you away from joining in the fun of doing it. It may even be frustrating at times, but it is still fun.



Ray GE0ML Collection

## SSB activity:

So the earth goes round, the sun continues to blow off its inert gasses and we have tilted down to allow those in the Northern Hemisphere to have a bit of sunshine and warmth.

It seems that somewhere this must all be connected to the change in band conditions and the diminishing signals on 40m. Local conditions have certainly changed over the past few weeks and the closer stations are becoming more difficult to hear early on in the nets.

One of these days we are going to have to go back to running a relay on 80m for the local guys while the Western Cape will be booming in on 40m, depending of course on where in the country you are.

I have never been on to much understand all the doings around sunspots etc. I know the theories behind it all, but certainly can't profess to understanding it. Be that as it may, there are changes in the band during the winter months which really upset the apple cart when it comes to local communication.

Of course, we have been through much worse than this, so please don't let it upset you or keep you away from warming the ionosphere with radio waves.

The SSB nets are still in full swing on Saturday morning with the Western Cape having their net on 3630 from around 07:00 and the National net on 7140 from 08:30. Both nets are still well attended by those interested.

Conditions have never been that bad for a long time, that we cannot hear each other, so do join us on frequency and your comments to the many varied and interesting topics discussed every Saturday.



Drake T-4X

## AM:

Winter always has the worst effect on the AM nets. Saturday morning, the band only opens from around 06:00 to Kzn and about 15 minutes later for local stations.

Then of course this only lasts for a short period when fading starts to take place from around 07:00.

On the Wednesday evening nets, you take what you get. On some occasions the band is great and conditions good, on other occasions, the band fades from about 19:15 and just doesn't come back.

Besides the cold conditions in the shack, especially on a Saturday morning, where here in Benoni it is around -1 to +3 these days, it does get pretty frustrating when the

band goes out to the more distant stations.

Even with all these changing conditions, let it not be said that the AM'ers are not an enthusiastic bunch. Most Saturday mornings there are at least 5-6 stations, but Wednesday evenings the enthusiasm tends to fail miserably.

Perhaps some form of prior communication on a Wednesday evening might at least let us know if there will be anybody out there trying to boost the waves at all. Either SMS, e-mail or What's App could prove to be quite successful.

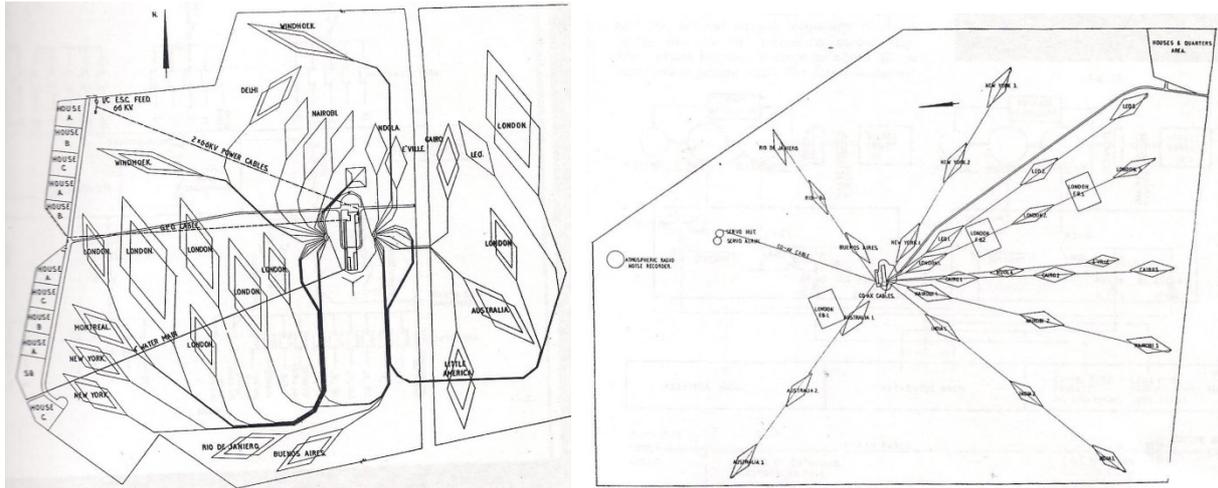
I am prepared to be there even if there is just one other person prepared to be on Frequency for a time.



Heathkit DX40

## “More Wadley” by Richard ZS6TF AWA Historian

During the early 1960's when your historian was a student apprentice with the British Post Office in the northern hemisphere, there was a dedicated group of engineers in the South African Post Office whose mission was to operate and maintain the International HF telegraphy and telephony links with the Commonwealth and the rest of the world. The transmission stations of Olifantsfontein and the receiving and control station of Derdepoort were officially opened on 26<sup>th</sup> June 1958. This was an immense undertaking with Olifantsfontein site, 27 km from Pretoria towards the then Jan Smuts airport covering 900 acres, and Derdepoort 1000 acres in extent situated 16 km north east of Pretoria. The real estate was chiefly needed for the rhombic antennas surrounding the central equipment buildings. They were supported on 110 foot wooden lattice masts, stacked in pairs at the former for the high power transmitters and linear pairs and triples for diversity reception at the latter.



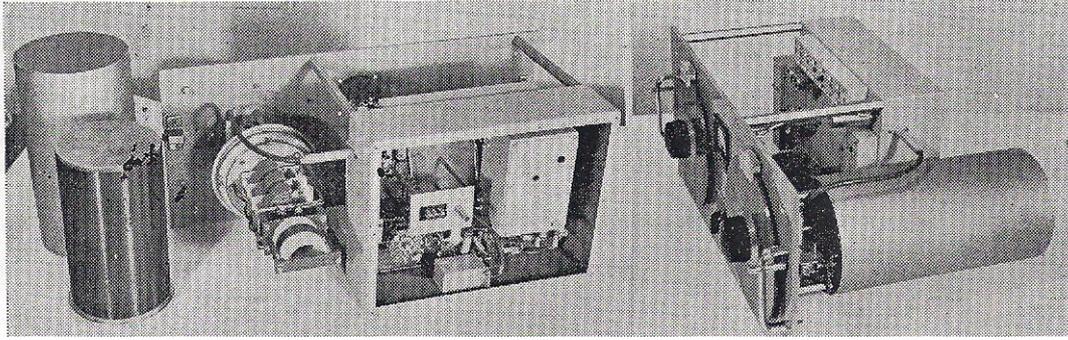
Olifantsfontein & Derdepoort site plans

Derdepoort, being the control station, housed all the telephony and telegraphy terminal equipment linked by high grade physical circuits to the Johannesburg International switching centre, and via landlines to the transmitters at Olifantsfontein. The modulation system employed was independent sideband (ISB) which can be likened to double sideband suppressed carrier but with the ability to separately modulate the sidebands with different signals with up to 100Hz to 6kHz bandwidth, equating to 2 voice channels or 16 FSK circuits on each sideband. After modulation, a low level pilot carrier was re-inserted before final mixing to enable synchronisation for demodulation to accurately reproduce the audio frequencies in the signal at the receiver.

This background is necessary to understand the need for the infrastructure that existed at Derdepoort, the expertise required to keep it going, and the profound effect the experience had on the many radio amateurs who worked there. One of the critical needs in such a setup is high frequency stability oscillators. The master reference at the stations was a highly accurate 100kHz signal transmitted over a 100MHz link from the Union Observatory, which also carried 1 second timing pulses.

The communications transmitters were factory fitted with multi-frequency crystal master oscillators but as the service developed, the advantages of a variable master oscillator became clear if the stability of the crystal oscillators could be approached. A solution proposed by Dr Trevor Wadley was adopted using the 28<sup>th</sup> to 68<sup>th</sup> harmonics generated by a harmonic generator fed from the station 100kHz standard, mixed in a classic Wadley loop drift cancelling system with an ovened 200 to 300kHz interpolation oscillator. 20 oscillators of this design were constructed by the TRL of the Post Office.

Eye-witness Pieter ZS6BVT recalls “We used oscillators on the transmitting station that also used the Wadley loop, they were all valves and very stable and also homebuilt. They were used as VFO's for the transmitters. We used to call them Wadleys. They were installed in a vertical rack of about five and there were about ten of them in a row. I did maintenance on them, They worked on exactly the same principle as the RA17. I do not think that there are any photographs available.”



The oven enclosure surrounding the interpolation oscillator can be seen clearly in the only surviving picture as the equipment was all destroyed when the stations were demolished under a veil of secrecy.

In order to check the calibration of these oscillators, instruments of greater accuracy were required. Once again Mr Wadley's principle was applied with finer levels of interpolation and a heterodyne wavemeter and a signal generator based on his principle happily survive in the SAIEE museum collection.



Below is a rare picture of the Derdepoort Radio Station which appeared in Suid-Afrikaanse Panorama, in 1964.



To the left of the mast in the foreground was the receiver hall behind which was the mechanical workshop. In 1966 the receiver hall was manned by Jan ZS6AKS, Tony ZS6AOG, Hofie ZS6CC and Jan ZS6BMS. To the right of the mast on the first floor

was the terminal equipment, library and laboratory inhabited by Dave ZS6AAW. On the right of the main entrance was the admin block where Marten ZS6ZY, Dennis ZS6EK, Colin ZS6AAO and Alan ZS6AL kept watch over operations and other SAPO duties.

Another eye witness Jan ZS6BMN tells us “At the start of my career in electronics I did my practical part of training at Derdepoort Radio Station in 1965/1966. I finished school in 1963 and went to college in 1964. I turned 18 and could at long last write the Amateur Radio Examination in November 1964. Those days one could not apply for a Ham licence in South Africa before the age of 18! At Derdepoort we had a pair of RA-17s with a Plessey diversity FSK unit on a trolley and this system was used for monitoring and as the receiving setup when running minor press or diplomatic news services. At that time I still had my listener's call sign: ZS6-237 and was trying to get to grips with CW. I also volunteered for night-shift. When everybody went to sleep I used the Racals on the trolley and turned the Collins log-periodic to the States to decode RTTY. The log-periodic was part of the Bapsfontein-USA system and was used with the latest Collins phase-lock loop receivers. These were easy to tune, but sometimes only locked on the correct frequency after numerous loop resets. On Amateur Radio side only ZS6UR was a regular on RTTY in South Africa so it was still a very rare mode. I still have all those printouts! I have really enjoyed the time at Derdepoort a lot! As the only trainee interested in Ham Radio I had privileges like access to the library (CQ, QST and all of that) and the laboratories and was permitted to use all of the test equipment too! Great training that was!

About 2 years ago your historian became aware that certain radio hams had home-brewed a copies of the Racal RA17. Hermen ZS6BGQ showed me such a unit acquired in pieces which he had completed some 30 years ago. In October 2012 at an AWA presentation at the Magalies club, a similar RA17 copy constructed and donated to the club by Marten ZS6ZY was seen on display. The final pieces came together at the Pretoria fleamarket in March 2014 where Johan ZS6CAG confirmed the extent of the clandestine project involving Hams employed by the Post Office and the SABC.

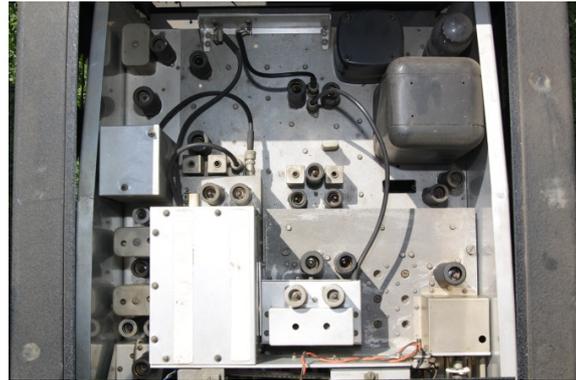
Jan, ZS6BMN continues ,”One of my practical tasks in 1965 was to re-assemble and align the RA17 that was previously taken apart to serve as example when some of the Hams at Derdepoort Radio embarked on a project to construct a number of these receivers. My 'Elmer', Gijs de Vries, ZS6AKO (SK), was a master die-maker and made the die and mould for the chassis and faceplate bezel. The end-result was a number of RA17 clones that possibly ran circles around the standard unit on SSB as they included a product detector and a few other smaller refinements like the S-meter calibrated in microvolts, rare for that time.” To confuse the British spies, the front panel labelling was in Afrikaans. Your historian has an ARRL handbook from 1949 in his possession, previously owned by ZS6AKO, bound in leather and in scribed in gold leaf “The Radio Amateur's **BIBLE**” The book is well thumbed and annotated, and shows he developed a talent at an early age for keeping his mind active during prolonged periods of boredom on a Sunday! Working at Derdepoort with long periods of waiting for a fault, causes creative minds to keep themselves occupied. Having found the leader (ringleader?) of the project, it was with great fascination I discovered that he not only masterminded the project supplying the bits to others that were beyond the average ham's homebrew capability, but that he constructed a matching exciter in the genre of the Racal MA79 and a legal-limit linear amplifier using three TT21 tubes feeding a cubical quad antenna.



When the undersea cable was commissioned in the late sixties followed by the commercial satellite service the demise of point-to-point radio stations was almost certain. Derdepoort Radio was closed down and all the radio equipment destroyed for security reasons. The buildings were used as laboratories for a short while, but together with the large property surrounding the station (a game reserve in the old days) everything was eventually sold to property developers. The building was demolished and all remains are a number of townhouse complexes.

This story is incomplete as there were at least 10 receivers made as a result of this project. It is amazing that project of this magnitude could be kept under wraps during the height of the cold war, against a backdrop of worsening political relations between

South Africa and the United Kingdom and its attendant security at a site also used for surveillance and diplomatic communication.



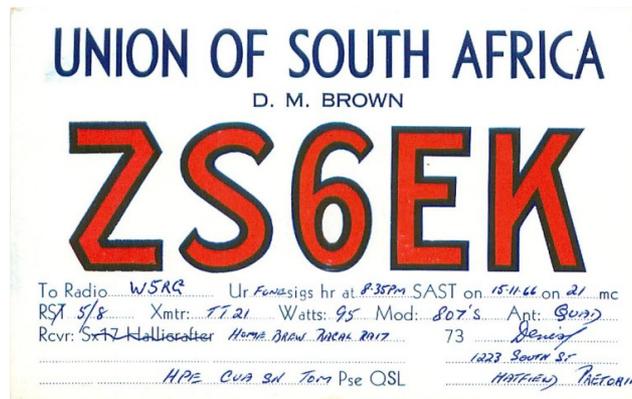
The ZS6AKO Ra17 Clone



The ZS6ZY RA17 Clone



The ZS6BGQ RA17 Clone



“Rcvr:Home Brew Racal RA17”

It is a tribute to the expertise and the loyalty to one another of the hams involved. Your historian would be highly appreciative to hear the whereabouts and details of the others to complete this important aspect of South African amateur radio history.

Special acknowledgements to Andy ZS6ADY for copy of original June 1958 SAIEE paper on Olifantsfontein and Derdepoort, Jan ZS6BMN for photos of Derdepoort, ZS6AKO station and commentary, and Pieter ZS6BVT for photos of the ZS6AKO and ZS6ZY clones and commentary.

## The \$4 Special Antenna

by Joe Tyburczy, W1GFH

(Used with his kind permission)

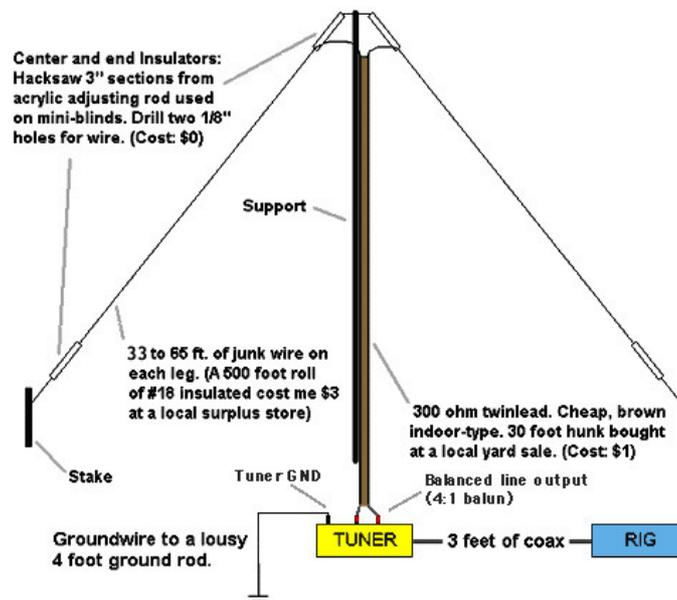
Sure, you can find "all-band wire antennas" for sale in the back pages of Ham magazines costing \$150 or more. But beware: *Marconi spins in his grave every time a ham buys an aerial instead of building it.* The plain and simple truth is that wire antennas for the HF bands were intended to be *hand-made* and not store-bought.

Untold generations of intrepid Radio Hams have fashioned their own equipment out of spit and bailing wire. Do you think the spark-gap dudes of the 1920's just went out and bought ready-built G5RV's from HRO or AES? No way! They slapped together aerials out of bedsprings, chewing gum, and frozen cow poop. For them, every day was Field Day. I think that home-built antennas should be awarded 10 db of "honorary gain" simply by virtue of their ingenuity. And in this world of microprocessor controlled micro-rigs, constructing one may be your only chance to build something and actually see it work on the air. Think about it. RadioWorks, Alpha-Delta, MFJ, B&W, Van Gordon, W9INN, and W7FG...nothing wrong with the wire antennas they sell. But buying one is no substitute for "rolling your own". Don't be overawed by their advertising rhetoric. You can make an antenna every bit as good as theirs, and even better in many cases.

### Just Do It

Don't be intimidated by SWR, either. Your rig will not blow up and kill you. Most modern rigs will politely refuse to transmit into a really bad match. A perfect 1:1 SWR is for sissies, anyway. All \*real\* hams have conducted perfectly good QSO's at 3:1 (or more) at some time or another. You may be surprised to know that the vast majority of hams didn't fret about SWR until after WWII when coax cable and SWR meters ("SWR Bridges" as they were first known) became available on the commercial market. Before that time, you simply cut your antenna to frequency, loaded the transmitter final for best output according to the plate current meter, and that was that.

I am a big fan of "balanced line" (twinlead, open wire line, etc.) vs. coax. By using balanced line and a tuner you can have one, single-element antenna that works well on all bands. You can't do that as easily with coax. The basic "W1GFH \$4 SPECIAL" shown below is a variation on the type of versatile skyhook I've been using for years.



Now at this point, some of you may be looking at the diagram and muttering, "Jeez Joe, that's just a dipole fed with twinlead and used with a tuner". Well of course it is. Virtually all antennas are "di-poles" (i.e. "two sides") in some form or another. This one just happens to be made from low-cost materials.

I won't go into the theory here, but trust me: balanced feedline, properly used, does not "leak" RF and is less lossy than coax. I've tried the commercial 450-ohm ladder line, but prefer 300-ohm TV twinlead, and the cheaper the better. Radio Shack TV twinlead is ideal. Home Depot has some good stuff, too. Forget all the obsessive junk about standing waves, impedance and velocity factor. What you really need to concentrate

on is getting an interesting set of *antenna insulators*.



#### Hang It Up

Back during the disco era when I first got on the air, I got a pair of really cool antique *pyrex antenna insulators* from a flea market table in Derry, NH for 25 cents each. They looked like the kind Hiram Percy Maxim used in 1910, and seemed able to pull in exotic DX all by themselves. The other day I found out that Radio Shack wants \$5 apiece for insulators made from some kind of white plastic crap. So I improvised my own by sawing up pieces of an acrylic adjusting rod from a discarded miniblind. I think Hiram would've been proud of me.

Hang the center of the antenna from a tree limb, or use a support as pictured. The exact height of the antenna's feedpoint is not crucial. The higher, the better. 20 feet might be considered the minimum. 60 feet is ideal. However, in the real world, 30-50 feet is average.

For the antenna wire itself, virtually anything will work, but something close to #18 stranded/insulated is ideal. My favorite stealth antenna material is magnet wire. You can dig this out of an old transformer or even a busted loudspeaker's coil. This ultra-thin stuff is truly INVISIBLE to neighbors and wives alike, and it'll handle 100 watts, no sweat. If you need to keep a low profile, try it as a long longwire, end-fed from your tuner's "wire" terminal. (Be sure and ground everything in the shack like crazy) No trees in your yard? Use a sock filled with sand for a weight and hurl the far end of the wire onto a NEIGHBORS roof or tree. (I would advise doing this at night. If you are caught, claim you are "trying out an old FARMERS ALMANAC recipe to keep bats away". People universally hate bats, and love farmers) If you can't possibly scheme to get your wire more than a dozen feet off the ground, try flinging a few hundred feet of the magnet wire all around the yard in a big loop (find out measurements in the ARRL Handbook or Google "80 meter loop antenna"). Loops can perform satisfactorily at low heights. And remember, don't fuss too much about SWR. A little mismatch is good for you and builds character.

The ends of the antenna will be "hot" with RF, so it's a good idea to keep them out of reach of people and pets, say, at least 10 feet above ground. However the antenna will still function if you bring the ends down closer to the ground.



#### Love Your Tuner

An antenna tuner with a balanced output (internal or external balun) is a must. Using one is a simple matter of adjusting capacitance and inductance for the lowest SWR on a given frequency. Always begin your adjustments at low power, increasing to full power only when you have a reasonable match. At first, you may think it's inconvenient and old-fashioned to manually tune your antenna every time you change frequency, but you soon discover the unique satisfaction of tweaking the variable caps and watching the reflected power dip lower as the received signals grow a bit louder in your receiver. It's "real radio".

My first tuner was a 1980's wood-grain cabinet style MFJ-941 I got at a swap meet for \$15 a long time ago and featured an internal balun and connections for balanced lines on the back. Make sure YOUR tuner is an outboard manual type antenna tuner such as this, and not an "automatic" or internal tuner that is a pushbutton feature on many modern rigs. Because they must use small, light-duty components, these built-in tuners are typically limited to handling mis-matches of 10:1. The mis-matches YOUR feedline will be seeing can be as high as 100:1. But don't worry. The he-man sized coils and air-variable caps in a typical outboard tuner will handle it just fine.

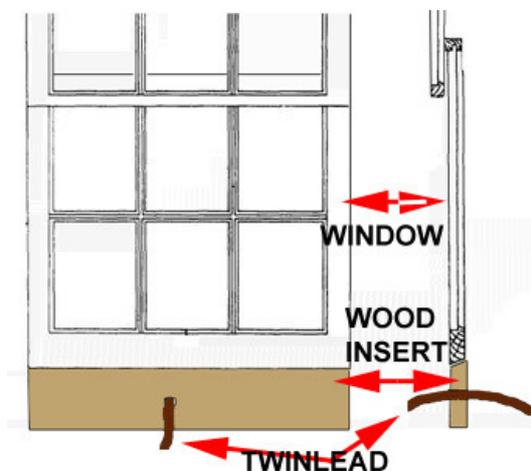
Don't believe the folklore about MFJ tuners being junk. It's true, they are cheaply made and their Quality Control is spotty, but the majority of them work perfectly OK if they aren't abused. So do old Dentron's, Drake, Vectronics, Nye Viking, etc. A link-coupled balanced tuner arrangement like the Johnson Matchbox would be even better, but use what you have. Or make one. Ham radio (unlike some other hobbies) isn't a competition to see who can own the best or most expensive gear. *The idea is to get on the air with what you have or can afford, enjoy your self making contacts, and as time and money permits, try something else.*

I had a 65ft. per leg version of this antenna working in Massachusetts, and it'd tune up on all bands 80-10. At my Burbank, California QTH, I used a 35 ft. per leg version, and it tuned up on 40-10. By the way, you'll notice it's an inverted vee --- a real advantage if you don't have room for a full-sized dipole in your yard. If you still don't have room, bend and angle the legs to fit the space you've got. Antennas gently bent into Z-shapes still work fine!

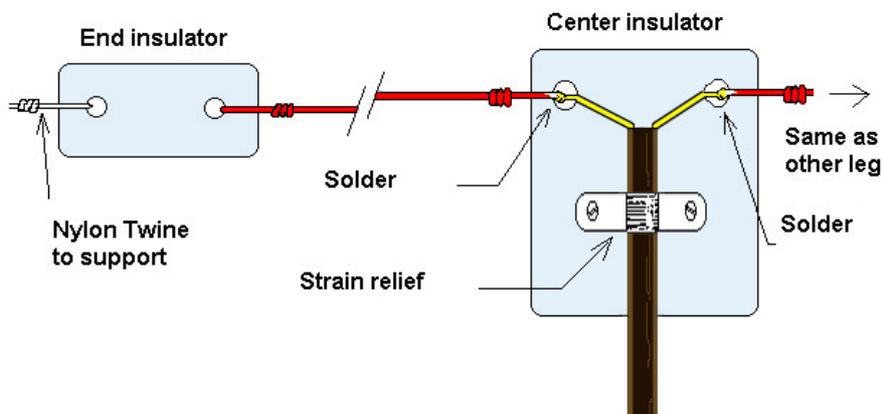


### The Magic Of Twinlead & Wire

The uncut feedline comes straight in thru a clever window sash arrangement first used by hams in the 1920's. (See drawing below) Alternately, you can attach the wires to feed-through bushings (which can be anything from two steel bolts...to a pair of banana jacks end-to-end) set into holes in the wood sash or a glass pane (or a plexiglass panel). 300 ohm twinlead only needs about 2" separation from metal objects in its path. Unlike coax, its "gotta be free" -- don't coil it up, kink it, bury it, or lay it on the ground. Gently brushing against tree limbs or tied to non-conductive surfaces like wood or plastic is OK. The 100 watt output of most transceivers makes TV twinlead a safe and practical choice, but a number of hams have used it successfully with power ranges up to 1KW PEP. You can obtain or construct an external 4:1 balun to make the transition from your twinlead feedline to a short length of coax, then bring the coax into the house via a single feedthrough hole if you'd like.



OK, back to construction for a moment. Here's a variation of the \$4 Special that uses center and end insulators made out of plexiglass sheet. But you can improvise yours out of an old DVD, sawed-up PVC pipe, a plastic Coke bottle...or anything you'd like.



If you want to be adventurous, try using 110VAC lamp cord ("zip" cord) as a feedline. Yeah, it'll work as a crude balanced line, believe it or not. Impedance varies, but is usually "close enough" to work. And that reminds me...



### Ham Tradition

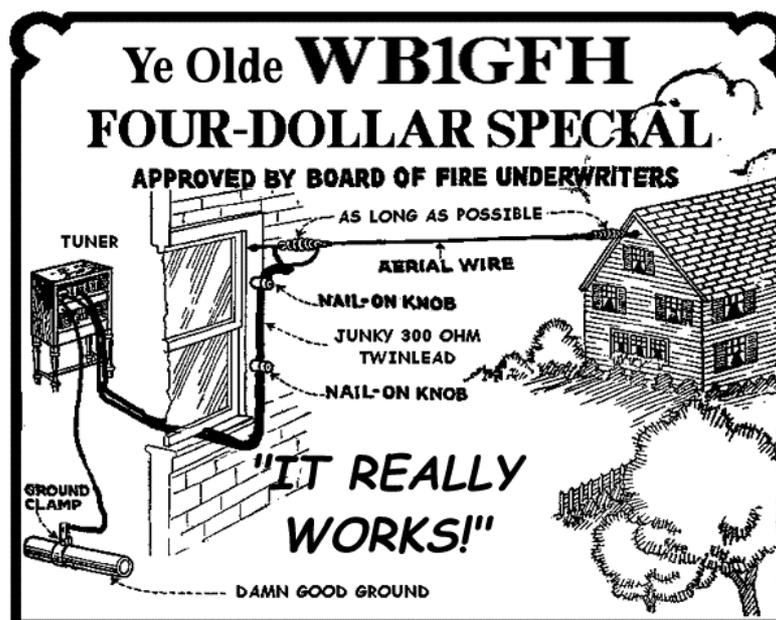
Today's new hams have been cheated out of the constructive experience of being harangued and berated by crabby old "Elmers" preaching about how they did things in the "good old days", so I am taking it upon myself to provide you with a taste of it here.

There is very little experimentation among hams these days, and most stations are cookie-cutter duplicates of one another: same antenna, same Japanese transceiver, same 599 QSO. This is not the ham radio tradition of old. In the 1930's and 40's you might find one ham using twisted bell wire as a feedline. Another might be using bare electric fence wire on ceramic standoffs nailed to wooden planks. Another might be using copper tubing. Or pieces of metal roofing. Or auto ignition cable. Or tin cans soldered together. If you looked at their stations you'd discover a wealth of marvelous invention, idiosyncratic design, and an incredible ability to press available objects and materials into service. During the 1960's, groups of hams would get together to swill cases of beer and then make antennas out of the discarded cans by soldering them together, end-to-end. **Improvise. Experiment. Take notes of what works and what doesn't. This is what ham radio is all about.**

When you put up your antenna is also crucial. I must mention here the importance of what many early hams called "antenna weather". That is, snow, sleet, freezing rain, or combination of all the above. It has been proven time and time again that any antenna installed in conditions better than abysmal will not function worth a darn. Or, put another way, it takes bad weather to put up a decent antenna. Dark and cold New England winter days are ideal for this activity. Any antenna erected on such a day will inevitably produce miracles.

Many of you will recognize THE \$4 SPECIAL'S design as the venerable "double zepp" aerial, a variation of the "end-fed Zepp" -- the skyhook responsible for the dramatic Hindenberg tragedy in Lakehurst, NJ. It seems the blimp's radio op decided to work a little DX while waiting for landing clearance. He sent out a few CQ's. Unknown to him, the ladder line had twisted in the breeze, shorting the bare conductors. A brilliant spark flared up, and.....well, that's another story altogether.

To see an "end-fed Zepp" version of the \$4 Special, just look below.



Alas, I never had a 100 foot tower to hang this antenna from. The one in Mass. was up 50 ft. and worked what I considered terrific DX. The one I have now is only up 30 ft. and gets good to average results. It won't outdo a Yagi at 100 feet. Very few things will.

**But for \$4....who can complain? 73! Joe.....WB1GFH**

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**Antique Wireless Association  
of Southern Africa**

**Mission Statement**

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yester-days radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association.

**Notices:****Net Times and Frequencies:**

Saturday 06:00—AM Net—3615  
Saturday 07:15—Western Cape SSB Net— 3630  
Saturday 08:30— National SSB Net— 7140; relayed on 14140  
Saturday 14:00— CW Net—7020  
Wednesday 19:00— AM Net—3615, band conditions permitting.

**AWA Website is operational;**

Visit the website at : <http://awasa.org.za/> and register on the site.